# GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN

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GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN

Report of the Fifteenth Session

Palma de Mallorca, Spain, 18-26 September 1980

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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DECISIONS, DIRECTIVES AND RECOMMENDATIONS OF THE FIFTEENTH SESSION OF THE GFCM

Management of living resources in the coastal area

- Definition of a littoral management policy (Recommendation GFCM/XV/80/1, paragraph 8)
- Evaluation of coastal resources (Recommendation GFCM/XV/80/2, paragraph 8)
- Development of the coastal area by artificial structures (Recommendation GFCM/XV/80/3, paragraph 8)

Fishery statistics and biological sampling

- Use of forms STATLANT 37A, and possibly 37B, and of forms to collect cpue data (paragraph 12)

Resource evaluation

- Adoption of the recommendations of the technical consultations on stock assessment in the Black Sea, the Western Mediterranean and the Adriatic (paragraph 36 and Annex E)
- Organization of technical consultations on stock assessment on a regular basis (paragraphs 27, 31 and 124)
- Adoption of the recommendations of the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation (paragraph 36 and Annex E)
- Intensification of studies on the use of analytical models (paragraph 37)
- Request to ICCAT to report on the evaluation and management of bluefin tuna (paragraph 38)

Management and utilization of resources

- Procedure for implementing Recommendation I/76/1 on mesh size (paragraph 42)

Regulation of fishing effort in trawl fisheries

- Action recommended to member countries to regulate their fishing effort (paragraph 56)

Utilization of small pelagic species

- Organization of a technical consultation (paragraphs 67, 68 and 124)

Training

- Action of the Secretariat to complete the Directory of training facilities and needs for the Mediterranean area (paragraph 76)

Regional project for the development and management of fisheries in the Mediterranean

- Adoption of Recommendation GFCM/XV/80/4 advocating implementation of the project and indicating the procedure to be followed (paragraph 100)

Regional Mediterranean and Black Sea aquaculture development projects

- Approval of the projects and of their association with the Cooperative Programme of Research on Aquaculture and the Regional project for the development and management of fisheries in the Mediterranean (paragraphs 114 and 119)

Joint FAO(GFCM)/UNEP coordinated project on pollution in the Mediterranean

- Note was taken of the progress report (paragraph 120)

Programme of meetings for the intersessional period

- Approval of a programme of meetings and terms for their organization (paragraphs 124 and 125)

Election of Chairman and Vice-Chairmen

- Messrs G. Bombace, S. Alfirević and R. Biaz were elected Chairman, first and second Vice-Chairmen, respectively (paragraph 131)

Date and place of the Sixteenth Session

- From 20 to 25 September 1982 in Cyprus, in principle (paragraph 132)

INTRODUCTION

1. The Fifteenth Session of the General Fisheries Council for the Mediterranean (GFCM) was held in Palma de Mallorca from 18 to 26 September 1980 at the kind invitation of the Spanish Government, under the chairmanship of Mr A. Demetropoulos. The delegates of 12 of the 19 member states, of the United Nations Development Programme and of the Intergovernmental Oceanographic Commission, a representative of the European Economic Community and observers of two international organizations took part in the discussions. The participants are listed in Annex B.

2. Mr Jerónimo Alberti, President of the Inter-Insular General Council, welcomed the participants. He emphasized the long-standing dedication of the Balearic islands to oceanographic research and the traditional role of fisheries in this part of Spain. He indicated that a plan was being implemented in the region for the management of artisanal fisheries, the development of marine cultures and the control of pollution.

3. Mr José Luis Alvarez, Minister of Transport and Communications, also welcomed those present at the meeting. Fisheries, especially in the Mediterranean, he declared, constituted for Spain a primary activity from an economic and social point of view. This industry was, however, very vulnerable and rigorous measures must be taken to protect it both at national level and, in the framework of the GFCM, at regional level. As a country with soundly established traditions of fishing, Spain was prepared to collaborate with United Nations Agencies and with all countries that might request its assistance in order to ensure that, in the context of the new international economic order, fisheries would become an activity beneficial to all the interests involved and would encourage the development of countries which still lacked an established maritime tradition.

4. The Chairman of GFCM, Mr A. Demetropoulos, thanked the Minister of Transport and Communications for this offer of collaboration. The problems raised by the development and management of fisheries were indeed very complex and required a multi-disciplinary approach, as was clearly shown by the discussions at the Symposium on Management of Living Resources in the Mediterranean Coastal Area. Mr Demetropoulos emphasized that the new responsibilities assumed by the Council in 1976 enabled it to tackle the problems of management with adequate means. A considerable effort, however, was still needed and the proposed Project for the Development and Management of Fisheries in the Mediterranean was intended to support that effort, just as the project for the development of aquaculture was intended to further the expansion of that activity in the region.

5. Speaking on behalf of the Director-General of FAO, Mr J.-P. Troadec thanked the Spanish authorities for their invitation to hold this session of the Council at Palma de Mallorca. He expressed the gratitude of GFCM for the active collaboration it was receiving from the Palma Laboratory of Oceanography and Fisheries and its research workers and welcomed Spain's proposal to contribute its technical cooperation to the FAO programme of assistance to the development and management of fisheries in the exclusive economic zones of developing countries. After rapidly reviewing the various stages of the work of GFCM in the past decade, he expressed the view that, while the orientations of the Council's activities and the work it was promoting at national level had been well chosen, progress was still too slow. That is why he was convinced that the project for the development and management of fisheries would be supported wholeheartedly by the Council and that concrete proposals would be put forward for its rapid implementation.

6. The agenda adopted by the Session is contained in Annex A.

I. SYMPOSIUM ON MANAGEMENT OF LIVING RESOURCES IN THE MEDITERRANEAN COASTAL AREA

7. In presenting the results of the Symposium on Management of Living Resources in the Mediterranean Coastal Area, Professor M. Amanieu, who had chaired the Symposium, stated that three points were to be emphasized:

- Firstly, the active participation of all in the discussions, the effort of each participant to find, through the concerns of each discipline and each situation, a common language, a homogeneous formulation of the problems and solutions envisaged. In this connexion, Mr Amanieu stressed the quality and pertinence of the statements which were always relevant.

- Secondly, the discussions showed that all participants were aware of the biologic importance of the living resources in the coastal area. However, their exploitation can only prosper insofar as it is given an appropriate place among the different activities which all compete for the same coastal area (town planning, tourism, agriculture, industry, pollution, etc.). In this respect, the exploitation of living resources is infinitely more dependent on the socio-economic environment of the geographic sector in which it occurs than large-scale demersal or pelagic fishing.

- Thirdly, in this coastal system, exploitation of the biologic resources constitutes a subsystem within which an analytic subdivision should be avoided, since this would dissociate the problems of inventorying and evaluation, exploitation and management of fisheries sensu stricto or of environmental management (artificial reefs or modification of lagoons). Therefore the articulation of the topics considered only constitutes an effort to present the discussion rationally and is not a rigid and restrictive framework for the future.

The report of the Symposium is in Annex C and a summary of the action it recommended is given hereunder:

(a) For better knowledge of the environment

- (i) continue research in marine biology and fisheries economy (page 40)
- (ii) complete the inventories of coastal resources (page 40)
- (iii) establish an inventory of lagoon sites (page 41)

(b) For better knowledge of the fishery potential and an optimization of present exploitation

- (i) increase the artisanal fishery data collection effort (page 42)
- (ii) assess the production (tonnage, value) and level of exploitation (page 42)
- (iii) intensify socio-economic studies to calculate the present size and future prospects of Mediterranean fisheries at the economic and social levels (pages 40, 41)
- (iv) monitor the resource and effectively regulate its rate of exploitation (pages 42, 44-45)

(c) For improvement in natural production

- (i) prepare a manual on lagoon fishery management (page 42)
- (ii) promote rational development plans for aquaculture and artificial reefs through the following action (pages 43-44):
  - training
  - large-scale experiments
  - study of positive or negative impacts on inshore fisheries
  - intensification of applied research (nutrition and pathology)
  - support for the artificial reef development programme

(d) For the promotion of integrated management

- (i) define national management strategies (pages 45-46)
- (ii) prepare national plans for the occupation of and ways of utilizing coastal areas so as to reduce conflicts (pages 42, 45-46)

(iii) study theoretical management schemes: ways of limiting access to the fishery, criteria for the allocation of resources, criteria and methods of distributing profits, solution of structural problems, strategies and progressive adaptation of existing schemes, etc. (page 42)

(iv) study especially the methods of allocating resources, within the framework of a clear definition of the future of the system for the exploitation of coastal resources (page 45)

(v) strengthen or establish cooperation among research workers, professionals and administrators through increased coordination among institutions, systematic exchanges of information, participation of the professionals in the decision-making process, and establishment of local or regional advisory commissions grouping professionals, administrators and research workers (pages 44, 47)

(vi) promote an overall conception for regulating fisheries in the coastal area (pages 44-45)

8. After having studied the conclusions of the Symposium and the list of actions proposed in the preceding paragraph, the Council underlined the diversity of the situations existing in the various Mediterranean countries as far as the volume of available fishery resources, the level of development of littoral fisheries and aquaculture, the utilization of littoral space and national management objectives are concerned; it unanimously recognized the need for a process of integrated management of the coastal area within which each country should define its individual approach and priority actions on the basis of its own objectives and means. It therefore approved the following three recommendations:

RECOMMENDATION GFCM/XV/80/1

DEFINITION OF A LITTORAL MANAGEMENT POLICY

Considering that the management of the coastal area implies a global process of reflection, discussion and decision-making, taking into account the interaction of all the activities conducted in that area,

further considering that this process is based on the definition of a management policy drawn up by all the parties concerned within a multi-disciplinary structure or mechanism,

finally considering that the authorities responsible for the management of coastal resources should contribute to this process the result of their analysis in order to ensure that the needs and prospects of coastal fisheries and aquaculture are taken fully into consideration in the management of coastal areas,

the Fifteenth Session of the General Fisheries Council for the Mediterranean recommends

- the definition of a national strategy indicating in particular the place of artisanal fisheries in management schemes
- the drawing up of coastal occupation plans according to types of utilization
- the formulation of practical management schemes
- the strengthening of liaison among fishermen, research workers and administrators by establishing multi-disciplinary reflection, discussion and decision structures.

## RECOMMENDATION GFCM/XV/80/2

## EVALUATION OF PRESENT COASTAL RESOURCES

Considering that the definition of a management policy for exploiting coastal areas (including lagoons) calls for appropriate knowledge of coastal fisheries and aquaculture,

recognizing the serious gaps in available data concerning the assessment of potentials and statistics in the broad sense (of production, socio-economic aspects, etc.),

the Fifteenth Session of the General Fisheries Council for the Mediterranean recommends

- the compilation of national inventories of lagoon sites and coastal resources in general
- increased data-collection efforts with regard to artisanal fisheries (production, value, socio-economic data)
- the assessment of present coastal production (in tonnage and value) and of the socio-economic role of littoral fisheries
- the intensification of socio-economic studies for assessing the prospects of exploiting the coastal area.

## RECOMMENDATION GFCM/XV/80/3

## DEVELOPMENT OF THE COASTAL AREA BY ARTIFICIAL STRUCTURES

Recognizing the interest in pursuing the effort to acquire the know-how leading to an economic return from new aquaculture activities,

considering the considerable prospects of developing mollusc production in certain coastal areas by means of artificial reefs or the immersion of shellfish culture installations,

considering further that such installations, by providing shelter and feed, help increase appreciably the biomass directly usable by man,

the Fifteenth Session of the General Fisheries Council for the Mediterranean draws the attention of the competent national authorities to the interest in promoting the development of such structures in the context of their integrated management plans for coastal exploitation.

## II. STATE OF FISHERY RESOURCES

### A. Fishery statistics and biological sampling

9. The present state of the GFCM statistical system (see Annex D) was summarized by the Secretariat. The main conclusions concerning catch statistics are as follows:

- reporting of data to the Secretariat is belated (two to three years late for some countries
- numerous inadequacies continue to exist in the geographical distribution of catches
- in some instances species are still poorly identified
- use of STATLANT form 37A is not yet systematic
- vernacular or local names appear all too frequently; use of FAO Species Identification Sheets should enable correct, standardized terminology
- official catch records continue to be heavily biased.

10. The lack of data on fishing effort must be highlighted because it not only hampers assessments considerably but also undermines their validity and the management measures stemming from them. It should be clear that no objective management scheme can be devised without adequate data on fishing effort.

11. Biological data remain very scant. A first compilation was attempted by the Technical Consultation for Stock Assessment in the Western Mediterranean held in Palma de Mallorca in October 1979. A similar exercise has been planned following the Technical Consultation for Stock Assessment in the Adriatic in June 1980. A compilation will also be included in the synthesis of Mediterranean resources undertaken by the FAO Fisheries Department.

12. Considering the progress which has still to be achieved in the field of statistics, the Council requested its Working Party on Resource Appraisal and Fishery Statistics:

(a) to give serious consideration to the routine use of the form STATLANT 37A and look into the possibility of creating a cpue form for laboratory reporting, as is being done in the region of CECAF (Fishery Committee for the Eastern Central Atlantic)

(b) to review problems arising from printing the lists of Mediterranean species on forms STATLANT 37A and possibly 37B

(c) to study the problems raised by the possible use of a STATLANT 37B form and make recommendations for its effective utilization or its replacement by a better adapted form

(d) to consider possible minor changes in the limits of statistical sub-areas to avoid errors in locating the source of catches.

13. Following this presentation, delegates from various countries described their difficulties or results.

14. The Council was informed that logbooks are now being kept onboard the fishing vessels of the public sector in Yugoslavia, i.e., 75 percent of the fleet. However, 25 percent of fishery activity takes place outside this system and will be covered by a different scheme based on sampling.

15. Italy made the following suggestions:

- due attention should be paid to the problem of using the STATLANT B form
- consideration might be given to changes in sub-areas to solve the problem of inaccurate allocations
- some closely-related species should be grouped together to reduce the risk of misidentification
- these suggestions should be studied by the Working Party on Resource Appraisal and Fishery Statistics at its next session.

16. An experiment is underway in Italy to improve the data collection system by sampling, the details of which can be found in paragraph 32 and in Annex I of the Technical Consultation for Stock Assessment in the Adriatic.

17. The delegate of Italy expressed the opinion that the Council's resources would have to be substantially increased in order to expand the number of working parties on essential topics while extending their competence.

18. In Spain, a major effort to assess landings per port is planned for trawl and longline fishing. As regards artisanal fishery, a single experiment is in progress at Castellón de la Plana, using methodology akin to that used in trawling. The delegate of Spain stressed the crucial need for effort data.

19. Algeria's problems stem primarily from a lack of skilled specialists. The country is currently appointing enumerators to take direct census of catches. Plans also exist to standardize the boxes used to evaluate landings and to install public scales. A new research centre has been established to study stocks and their management.

20. In France, a specialized service to gather statistics is under study for the Mediterranean area.

21. Morocco enjoys a privileged position due to its Atlantic coastline and therefore appreciates the action of the CECAF regional development project. An identical project in the Mediterranean to improve the collection of statistics would have a positive impact. A new data collection form, better geared to research requirements than the previous one, has come into use. A study conducted in Morocco highlights the poor quality of gross tonnage as a measurement of effort, a concept which has been replaced by that of "trip".

22. In Bulgaria, national statistics collection is no problem.

23. However, a major effort is required from Turkey in upgrading and reporting its statistics concerning stocks of common interest to Bulgaria and Turkey.

24. There is no problem for national statistics collection in Cyprus.

25. The observer from the International Commission for the Conservation of Atlantic Tunas said that the Commission had drawn up a manual on the collection of tuna fishery statistics whose methodology could be applied to other Mediterranean resources. He pointed out that it was difficult, not to say illusory, to devise a fishery policy without statistics, and that a major financial effort by States was necessary.

B. <u>Resource evaluation</u>

26. The Council was informed of the results of the three sub-regional technical consultations on stock assessment and the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation. These results appear in the reports of the meetings submitted to the Council for consideration.

27. The reports emphasize the pressing need to speed up the knowledge acquisition process through enhanced regional collaboration, making use of all available means and solutions. In particular, the Council requested that technical consultations be held on a regular basis.

28. As far as the Adriatic is concerned, a second consultation is due to be held in Ancona in May 1981. A joint trawling programme is underway, and the acoustic programme is only waiting for administrative problems to be solved (necessary authorizations) to carry out the intercalibration exercises in Split. It was stated that a joint egg and larval and acoustic evaluation survey had been undertaken; this would enable a comparison to be made for the first time with the results obtained by echosounding. Moreover, estimations of larval and adult mortality rates will be available from November 1980.

29. With regard to the western Mediterranean, the delegate of Spain stated that his country wished to participate very actively in a joint programme together with Algeria and Morocco for the evaluation of pelagic species in the region; a Spanish research vessel would be available for this purpose. The Algerian delegation was very much in favour of such cooperation and of a breakdown for evaluation purposes of the statistical sector of Algeria into subsectors, as had been done for the Moroccan and Spanish sectors.

30. As regards the central Mediterranean, the delegate of Tunisia said that resource evaluation for management purposes would be the first priority in his country. He stated, for example, that the last evaluation of pelagic stocks dated back to 1974 and that a new assessment needed to be made. He also said that an important coastal fisheries development project was underway with the aid of the World Bank and that it was hoped to receive support from FAO. He emphasized that too many errors had been made by taking decisions without trying to obtain adequate information concerning the resources or not taking them into account. He also stressed the need to increase the training effort in the fields of data collection and evaluation. He added that he was in favour of any cooperative programme for the promotion of this type of activity.

31. The Council noted the shortcomings of its activities in the central and eastern Mediterranean where technical consultations should also be organized.

32. The Libyan delegate stressed that the problems discussed in the GFCM were in line with the preoccupations of his country. He stated that the statistics had been underestimated by half for over ten years. Libya accorded high priority to the problem of resources and was already cooperating with Algeria, Greece, Italy, Spain and Tunisia in exploitation. The Libyan delegate offered his full support for the promotion of cooperation in the central Mediterranean.

33. In the absence of Turkish representation, the Secretariat recalled the disturbing situation of anchovy and horse mackerel stocks in the Black Sea and the need to promote an assistance and training effort so that Turkey could strengthen its capacity and succeed in controlling fishery development in its waters.

34. The Bulgarian delegation made two comments on the report of the Technical Consultation on the Assessment and Management of Black Sea Turbot: the regulations of the Mixed Commission for Black Sea Fisheries indicated 35 cm (not 36 cm) as the legal minimum size of fish landed and 180 mm (not 200 mm) as the mesh size for gillnets (side of the mesh).

35. The Council was informed that, under its world programme for resource evaluation, FAO had a ship available on a full-time basis. This ship will travel from the Indian Ocean to the Atlantic Ocean and will pass through the Mediterranean in April 1981. It could therefore be used to carry out a survey for the evaluation of pelagic resources of some countries of the region. Contacts are at present being made by FAO with the countries likely to be interested in the survey.

36. In conclusion, the Council adopted the recommendations of the various technical consultations as well as those of its Working Party on Acoustic Methods for Fish Detection and Abundance Estimation. These recommendations are given in Annex E.

37. Furthermore, the Council recommended that:

(a) Biological data should be compiled at the sub-regional level, taking as an example the data compiled within the framework of the Technical Consultation for Stock Assessment in the Balearic and Gulf of Lions Statistical Divisions (Annex I of the Report) which should be completed as far as Algeria, Morocco and Spain are concerned. The procedure used by the Technical Consultation for Stock Assessment in the Adriatic (definition of the topics, distribution of responsibilities, preparation of a timetable) should be extended to all the sub-regional consultations.

(b) Studies on the use of analytical models should be intensified in view of the fact that the existing catch and effort data, the quality of which is far from perfect, have been utilized to the limits of their possibilities.

38. Before closing the discussion on this item of the Agenda, the Italian delegation drew the attention of the Council to the large quantities of bluefin tuna caught during recent years by vessels foreign to the region. The Executive Secretary of the International Commission for the Conservation of Atlantic Tunas (ICCAT) recalled the action undertaken by the Commission for the conservation and management of this species. He recalled in particular that a minimum size for landings had been fixed at 6.4 kg and that each fishing country should block its level of catches at that of recent years. The Council expressed its concern at this increase of fishing activity and requested ICCAT to report to it at its Sixteenth Session on progress made in the assessment of this stock and its management.

## III. RESOURCE MANAGEMENT AND UTILIZATION

### A. Implementation of Recommendation I/76/1 on mesh size

39. The Secretariat informed the Council of the results of its survey to assess the level of enforcement of Recommendation I/76/1 on mesh size (see Annex F).

40. The survey shows that only eight countries have supplied information on the way in which they are enforcing this recommendation.

41. In agreement with the conclusions of the Third Session of its Committee on Resource Management (Rome, 17-19 June 1980) the Council considered that this situation was worrying and should be resolved by taking progressive action.

42. The Secretariat was therefore requested to send to all member countries a letter:

- reminding them of the need to enforce the regulation which they had adopted
- stating the procedure to be followed (see in this connexion paragraph 33 of the report of the Third Session of the Committee on Resource Management)
- specifying that the duration of the transitional period before the full enforcement of the regulation had been fixed at 3 years (until 1 October 1983)
- asking each country to report to the next session of the Committee on Resource Management on the progress achieved, in particular, in the field of comparative tests and information campaigns.

43. During the discussions which followed the statement of the Secretariat, the need for all countries to strengthen substantially their means of control was underlined.

44. The delegate of Spain stated that his country had made a great effort to strengthen control. The patrol fleet would soon be increased from 12 to 47 units. This fleet would make it possible to monitor effectively the 5 000 fishing vessels of the Spanish Mediterranean region.

45. The delegate of Spain also drew the attention of the Council to the need to regulate not only mesh size but also engine power which has an influence on the selective properties of trawls.

46. The Secretariat stated that the recommendation provided for possible exemptions from the regulation in the case of special fisheries. These exemptions depended on national authorities but the latter were bound to inform all the member countries and to present scientific justifications for such exemptions.

47. The delegate of Yugoslavia declared that selectivity studies carried out in his country had confirmed that the 40 mm mesh size would reduce appreciably the fish mortality rate and protect the juveniles of the main commercial species. He also said that Yugoslavia was ready to share its experience with member countries which needed technical support for such studies.

48. The delegate of France informed the Council of the results of the survey on the mesh sizes actually used by trawlers in the Mediterranean. The replies could be summed up as follows:

(a) Administrative controls were irregular and were made essentially in the ports, although about 100 operations had been carried out at sea in 1979.

(b) It was contemplated to carry out these controls regularly in the future.

(c) The number of vessels monitored by this survey represented, according to the area, between 50 and 100 percent of the active trawlers.

(d) In 1979, measurements had been made on a series of 20 meshes, using either a rule or a flat gauge; the measurements gave an average figure close to 39 mm (extreme values 30-44 mm).

(e) The average engine power of trawlers in the Gulf of Lions was close to 290 hp (extreme values 75-430 hp).

B. Regulation of fishing effort in trawl fisheries

49. In introducing this very important item on the Agenda, the Secretariat recalled the observation made at the Symposium on Management of Living Resources in the Mediterranean Coastal Area, namely that fundamentally the national laws currently in force had been drawn up on the assumption that resources had a production capacity far exceeding fish extraction capacities. Therefore, their objectives were essentially biological - for example, to reduce the catches of particularly vulnerable strata (juveniles, breeders) of this stock - or intended to minimize damage between different gears (banning trawl fisheries in the area of artisanal fisheries, for example).

50. Rarely did they tackle the essential but very complex problem of exploitation of a shared living resource. The production of fish stocks being limited and depending on stock size, the foremost prerequisite is to maintain the stock at its optimum production level. But although this condition is essential, it is not sufficient for a rational utilization of the resource; this being a shared resource, every fishery would attract new participants and an increase in the activity of already established fishermen to the point where a zero economic return would be reached.

51. The need to maintain participation in fishing activities at the level where the fishery is able to produce the maximum economic and social benefits raises the immediate problem of determining the right of access to fishing.

52. Conserving the resource at its optimum production level, regulating the means of exploitation and their activity at the minimum level to ensure this production, and defining the right to participate in fishing operations involve a series of extremely complex scientific, technical, administrative and political problems which must be solved satisfactorily if the state of fisheries is to be gradually improved.

53. The initiatives taken by GFCM in this respect were recalled. As had been recommended at the Fourteenth Session, a report entitled "Regulation of Fishing Effort with Special Reference to Mediterranean Trawl Fisheries" was prepared by a consultant (Mr P.H. Pearse). This document deals with the problem and the options contemplated for regulating the fishing effort, including criteria for choosing possible measures, reviews the regulatory schemes established in France, Greece, Italy, Spain, Tunisia and Yugoslavia, and gives a list of the main documents dealing with the question.

54. The author then compares the advantages of systems based on limitation of fleet capacity, the levying of a fee on catches, and the quantitative limitation of fishing rights. He concludes that this last measure is better suited than the others to regulate both the catches - hence the size of stocks and their production - and the fishing effort - hence the cost of fishing operations. It implies, however, that the authority in charge of fishery management must be in a position to know and control catches. Countries which have not yet acquired this capacity would have to resort to less satisfactory methods such as the limitation of fleet capacity.

55. The Council expressed its great satisfaction with the quality and usefulness of this report.

56. The Council then noted the conclusions and recommendations of the Third Session of its Committee on Resource Management (Rome, 17-19 June 1980) and approved them. These can be summed up as follows:

- preparation by the fisheries administrations of the countries not covered in the Pearse Report, of notes on initiatives and schemes to regulate the fishing effort in trawl fisheries (paragraph 47 of the Committee's report)

- a suggestion that all member countries set up a licensing system straight away (paragraph 51)

- study and preparation by the member countries of schemes to regulate the fishing effort applicable to their fisheries (paragraphs 52 and 53)

- organization, later on, of a regional meeting on practical ways of controlling fishing effort (paragraph 55)

- lastly, it was hoped that member countries would prepare fishery management plans and exchange them within the GFCM framework (paragraph 59).

57. The Italian, Spanish, Tunisian and Yugoslav delegations reported on the measures taken in their countries to regulate the fishing effort. In most cases, recourse is made to limitation of fleet capacity, that is to say, the number of vessels and one or two parameters (engine power, tonnage) which have a determining influence on their fishing power. It is important to take into account the increase in efficiency of the authorized vessels, for example, by modifying the size of the fleet at the time of periodic issue of licenses. The increase in efficiency will be monitored through collection of appropriate catch statistics per unit of effort.

58. The Council stressed the importance of the preparation by each country of national development and management plans; it thought it desirable that the countries exchange them, for information purposes, through the Secretariat. The Italian delegation suggested that the Committee on Resource Management be requested to give technical advice on these national plans.

59. The Council also stressed that, in order to be in a position to prepare comprehensive development and management plans, countries should be equipped with an institutional structure covering and integrating the different components of the fishing system. In this connexion, some delegates reported on reorganizations carried out in their countries and on the establishment of special committees enabling all fishery aspects to be considered simultaneously and comprehensive measures to be adopted.

60. The Council recognized the importance of the speedy adoption of licensing systems by the national authorities in charge of fishery management. In this respect, it was stressed that these systems should aim not only at limiting fleet capacity but also at controlling the distribution of fishing activities among the different stocks. The Council stressed the need to introduce such systems as soon as possible in the fisheries in view of the long delays involved in the effective introduction of efficient systems and in order to avoid the enormous economic and social difficulties which a reduction of the fleets causes.

61. The Council finally recognized that the development of schemes to regulate the fishing effort gives rise to complex political problems, bound up with the sharing of resources and the profits earned from fishing. Although decisions in this respect do not rest with national and regional technical and scientific services, it is however important that these services study all their implications at the technical level.

## IV. UTILIZATION OF SMALL PELAGIC SPECIES

62. The Council reviewed the measures taken to implement the recommendations of its Fourteenth Session regarding increased utilization of small pelagic species for direct human consumption and considered how closer cooperation in this field could be achieved.

63. The Council's attention was called to the document "Progress report on the cooperative programme on small pelagic fish utilization" (see Annex G). The report summed up priority research and development programmes being carried out by fish technology institutes in the region for better utilization of these species. Steps taken by FAO to improve the handling and utilization of small pelagic fish on a worldwide basis were also outlined in the report.

64. Delegations described the present situation of the utilization of small pelagic fish in their countries. They were unanimous in stressing the importance they all attach to the subject.

65. Several delegations reported on efforts to increase consumption of these species. The difficulty of changing traditional food habits was emphasized. A number of participants described their current programmes for production diversification of small pelagic fish.

66. The Council recognized that food processing technology could increase consumption of these species by improving the quality of traditional products or developing new products. However, it also recognized that other aspects of small pelagic fish handling, processing, transportation and distribution needed to be improved.

67. The Council finally recognized the need to propose more specific action programmes in order to promote closer collaboration among regional technological institutes. Because of the specialized nature of the subject, it was decided to organize a technical consultation of senior fish technologists and economists to discuss the problems of handling and utilization of small pelagic fish in the region and how to tackle them on an industrial and commercial scale.

68. The delegate of Spain made an offer to hold the consultation in Madrid in May 1981. The Council welcomed this invitation.

69. The Secretariat was requested to communicate with the institutions concerned in the region to prepare a provisional agenda for the consultation and to identify possible participants. FAO, through its projects for small pelagic species, will seek funds to ensure the participation of representatives from developing countries.

V. TRAINING

70. In introducing this agenda item, the Secretariat recalled that the Fourteenth Session of GFCM had devoted one day to a consultation on training of fishery personnel in all sectors in the Mediterranean.

71. The Session had agreed that while training and improvement of personnel was a crucial element of rational fishery development in the region, it was not possible or economically feasible for many countries to establish and maintain permanent training facilities to satisfy all their needs.

72. The Council had therefore deemed it desirable to work out a formula which would make it possible for all member countries to utilize in the best way all substantial training facilities existing in the region. It had therefore considered that the first measure to be taken was to establish a system to facilitate, through the strengthening of exchanges within the region, the full utilization of available training means by publishing a Directory of Training Facilities and Needs for the Mediterranean.

73. On the Council's instructions, the Secretariat sent to the directors of fisheries of member countries, under cover of a circular letter, a questionnaire prepared to collect information on available training facilities and on training needs.

74. Replies have been presented, in a standardized way, in the document "Progress report on the preparation of a directory of training facilities and needs for the Mediterranean area" submitted to the Council for consideration.

75. The Council regretted that only eight member countries had provided the information requested, thus limiting considerably the scope of the Directory in its present form.

76. It requested the Secretariat to insist on seeking information from the countries which have not replied. If sufficient data are received, a small working group would be convened to analyse them, seek ways of relating training to management policy, and set priorities in training.

77. Several delegations provided additional information on training facilities, including aquaculture, available in their countries. This confirmed that a variety of training facilities exist in the Mediterranean. The Council further noted with interest the establishment of a marine technology college in Zuara, Libya.

78. The Council felt that training of personnel at the primary or intermediate levels was a national responsibility and underlined in this respect the need to train instructors for developing countries. On the other hand, teaching of high-level personnel requires complementary training. Obviously GFCM cannot take part in mass training at national level. It can, however, make an effective contribution by providing educational material in the required languages, assisting in training instructors and high-level personnel in specialized fields, and disseminating information on training opportunities.

79. The representative of the Intergovernmental Oceanographic Commission (IOC) called the Council's attention to his organization's interest in oceanographic training. He requested the Council to inform IOC of its future decisions on fishery and aquaculture training so that IOC could take them into account in its own programmes.

## VI. PROPOSED REGIONAL PROJECT FOR THE DEVELOPMENT AND MANAGEMENT OF FISHERIES IN THE MEDITERRANEAN

80. In its presentation of this agenda item (see Annex H), the Secretariat briefly recalled the progress made by the Council in the past decade. Progress had been substantial, specifically in resource evaluation and fisheries management. It had had a substantial impact on the growing awareness of problems on the part of national administrations, on the strengthening of national technical capacity and the speeding of decision-taking and action at national level.

81. The proceedings of the present session showed that this promising progress was still insufficient. The economic situation of various fishing industries was difficult, and others were developing too slowly. The acceleration of activities in the western part of the region, made possible by the strengthening of national capacity and attested by the long list of activities recommended by the Council for the coming inter-session, should not obscure the fact that a special effort must be directed toward the eastern basin of the Mediterranean, an effort geared primarily to training and strengthening of national expertise.

82. Moreover, many Mediterranean countries which now have operational personnel and structures often needed specific assistance (visits by consultants, participation in working parties and seminars, etc.) on clearly specialized subjects, rather than long-term projects. This need directly concerned GFCM in the fields for which it was competent, i.e., for all problems affecting the region as a whole (evaluation, development and management of common stocks) or common to several countries of the region (utilization of small pelagic species, training of senior personnel, etc.). Deficiencies of member countries prevented them from participating fully in the Council's activities and therefore slowed down the progress of those activities, making it impossible for them to take advantage of the Council's activities for the development of their fisheries.

83. The idea of executing a project for the development and management of fisheries in the Mediterranean grew out of the realization of this fact and of the prospects offered by regional cooperation in Mediterranean fisheries. At the Thirteenth Session of FAO's Committee on Fisheries in October 1979, several delegations stressed the special needs of Mediterranean fisheries and pointed out that the great similarities in their nature, prospects and obstacles to their expansion, together with disparities in the development of national fisheries, made the Mediterranean a region especially suited to the establishment of a multi-disciplinary regional programme. This point of view was endorsed by the Seventy-sixth Session of the Council and the Twentieth Session of the Conference of FAO in November 1979. A project document had been prepared by FAO at the explicit request of several Mediterranean countries expressed at those meetings.

84. Nevertheless, the funding of this project was encountering serious difficulties. The budget of FAO's Regular Programme did not make provision for strengthening the human and material resources that the Organization made available to the administrative and technical Secretariat of GFCM. The representative of the United Nations Development Programme (UNDP) stated that the funds available in the budgets of its regional offices for the Arab countries and Europe and of its interregional office were all committed for the funding cycle ending at the end of 1981 and that, considering the needs and priorities, especially regarding the neediest developing regions, its possible contribution to the project for the next cycle (1982/1986) could be a modest one at best and would depend on voluntary contributions in cash and in kind of the GFCM member countries. It was ultimately on them that the final decision regarding implementation of the project would depend.

85. During its discussions, the Council recognized unanimously that the project was highly important for the future of Mediterranean fisheries and for the strengthening of national capacities and structures. It underlined the potential for development offered by regional cooperation in the Mediterranean and felt that the strategy adopted by this project was particularly appropriate, inter alia for the following reasons:

- a catalytic approach, i.e., the resources available at regional level would serve essentially to harmonize and promote the purely national efforts and activities

- the fact that responsibilities were entrusted largely and directly to national institutions

- the strengthening and promotion of technical cooperation among developing countries (TCDC), especially by the use of national expertise at regional level

- the fact that liaison with national administrations was made easier by the existence of the Council, which would be responsible for identifying the main lines of action and priorities for the programme of work of the project. The latter would have to submit periodic progress reports to the Council.

86. Several participants, in particular the Moroccan delegate, told the Council of their experience of similar regional projects and the benefit they had derived at national level. They mentioned various examples of those benefits (training, working parties and seminars, mobilization and organization of joint survey cruises, collection of statistics from countries outside the region engaged fishing off the coastal countries, etc.).

87. All delegations present indicated that they were prepared to participate actively in the project and stated what contribution they proposed to make to it.

88. The Italian delegation announced that its Fisheries Directorate had been in contact with the Ministry of Foreign Affairs which administered international cooperation funds, to explain the importance of the project. Although no decision had yet been taken, Italy's contribution might take several forms, e.g., the provision of experts and consultants, the financing of study courses and fellowships, financing of the execution of, or voluntary participation in, joint resource-survey cruises in sectors of the Mediterranean still to be determined.

89. The Moroccan delegation declared that Morocco would participate in and contribute to the project to the extent of its resources.

90. The delegate of Yugoslavia associated himself with all who supported the project. He was disturbed by the scale of activities recommended by the Council for the next intersessional period and feared that the resources available would not be sufficient to complete all those activities. His country would participate in the activities of the project. Yugoslavia was particularly interested in fisheries technology development. It would provide the project with the services of its experts and its institutions in the fields of statistics, fish processing and training of senior officers on the usual terms.

91. The delegate of France assured the Council of his country's interest and the importance it attached to the project. He stated that the French Fisheries Directorate had contacted the various administrations and institutions concerned to ascertain what contribution France would be able to make to the project, taking into account the French bilateral and multilateral activities already going on in the Mediterranean.

92. The delegate of Tunisia stated that his country supported the project and would do its utmost to contribute toward it by providing whatever resources were at its disposal. The project could help the developing countries by carrying out joint survey cruises off their coasts, organizing training courses and strengthening national activities and structures in various fields, particularly in fisheries technology.

93. The representative of the European Economic Community drew the attention of the Council to the fact that the Scientific and Technical Committee for Fisheries, established by the Commission of the European Communities, would examine problems of Mediterranean fisheries in depth during one of its next sessions; pending the outcome of its studies, no decision on the EEC's contribution to the project could be taken. He emphasized the interest of his organization in Mediterranean fisheries and in the activities of GFCM and that therefore the project was very much appreciated as being likely to give the EEC's activities valuable support.

94. The delegate of Spain said that his country saw the project as a means of speeding up the rationalization of Mediterranean fisheries, a problem in which the time factor was crucial. He pointed out that his country was about to sign a protocol of agreement whereby it would make available to FAO, free of charge, various resources such as experts, research vessels, training institutions, etc., for the execution of its programme for the development and management of fisheries in the exclusive economic zones. It seemed quite natural to him that his country's contribution to the Mediterranean regional project would materialize in the context of the protocol. More specifically, his country would consider making available to the project, free of charge, one or two biologists and several months' use of a research vessel for acoustic surveys. But his country would find it difficult to offer a contribution in cash.

95. The delegate of Cyprus reiterated the great importance his country attached to this project. His Government was at present studying what contribution in cash and in kind it could make and would inform FAO of its final decision.

96. The delegate of Algeria was of the opinion that the project would provide impetus and support for strengthening his country's capabilities in fisheries. He would endeavour to convey its importance to his Government and would see to it that the Algerian authorities give adequate attention to considering the contribution they could make.

97. The Libyan delegate announced that, although he could not make any commitment at present, he would strive to secure from the relevant administration a contribution commensurate with the importance he attached to the project.

98. The Bulgarian delegation stated its wholehearted support to the project.

99. The representatives of the Arab States taking part in the Session informed the Council of their intention to draw the attention of the Arab League to the project and to underline its importance for the complete development of fisheries of the Arab countries in the Mediterranean.

100. At the close of this discussion, the Council adopted the following recommendation:

RECOMMENDATION GFCM/XV/4

The Fifteenth Session of the General Fisheries Council for the Mediterranean,

taking into account the great potential economic and social value of Mediterranean fisheries and the urgent need for their rationalization,

stressing the substantial results achieved through regional collaboration and the highly promising prospects they afford for fishery development in member countries,

being aware of the difficulties met by FAO and UNDP in funding the necessary expansion of the Council's activities, in particular, programmes aimed at supporting the developing countries,

expresses the opinion that the Regional Project for the Development and Management of Fisheries in the Mediterranean is essential to the fulfilment of the Council's responsibilities,

approves the Project's strategy and supports it wholeheartedly,

welcomes the highly positive intentions to make voluntary contributions voiced by all the countries represented at the Session,

insistently urges the United Nations Development Programme to give the utmost consideration, taking into account its responsibilities toward developing countries, to the possibility of financing certain basic activities of the Project in order to ensure its neutrality and promote the full participation of all Mediterranean countries,

requests the Director-General of FAO to consult the Members of GFCM as well as possible donors about the nature and amount of their participation in the Project and, to the extent that adequate resources are secured, to take the action required to launch the Project without delay.

## VII. OTHER REGIONAL ACTIVITIES

### A. Regional Mediterranean and Black Sea aquaculture development projects

101. The Secretariat outlined the background and objectives of the regional Mediterranean (MEDRAP) and Black Sea aquaculture development projects, and described the action underway or planned in the preparatory phase (see Annex I).

102. The purpose of MEDRAP is to increase the production of fish, crustaceans and molluscs, and hence employment opportunities for the coastal population. This objective should be achieved by transfer, adaptation wherever needed and improvement of existing techniques.

103. The proposed action is based on the idea that there exists an already important scientific basis in the region and outside it. On the other hand, there is a lack of liaison between research and development, which needs to be better organized. The action proposed is therefore the following:

- implementation of national development programmes
- execution of different types of national projects (pilot projects or commercial farms) by the transfer of proven technologies, the provision of technical assistance and staff training
- making available supporting services at the regional level, in particular research services to improve production techniques, training facilities and the exchange of information.

104. The regional project is based mainly on the development of national projects, whose experiences can serve all or part of the region. In order to organize and assist this development, the project will have a small basic team entrusted with providing continuing assistance, information and coordination of training.

105. No financial assistance to cover the investments of each national project is planned; only continuing technical assistance, specialized assistance (consultants) and part of the support needs (training, information, applied research and specialized equipment) will be provided. The basis of this funding is assured by the United Nations Development Programme (UNDP) but other funding sources are necessary and contacts with various governments or organizations have been or should be made.

106. The preparatory phase started in June 1980, and the project should become operational in 1981. The Project Coordinator has already undertaken to define with each country the national projects able to contribute to the regional project and the needs to be covered.

107. The Secretariat indicated that the coastal countries of the Black Sea had also expressed their interest in the development of coastal aquaculture and that UNDP had approved a project providing preparatory assistance for studying the needs and possibilities of implementing a regional cooperative project.

108. It should be pointed out that these projects will be implemented within the framework of the interregional aquaculture development and coordination programme and that, as such, they can benefit from inputs (transfer of methods, expertise, etc.) from other projects outside the Mediterranean and Black Sea region.

109. The Council was invited:

(a) to comment on the proposal for regional projects to develop aquaculture in the Mediterranean and in the Black Sea

(b) to express its views on the importance to be attached to these activities and on the measures to be taken to accelerate their execution

(c) to give its opinion on means to promote close cooperation among Mediterranean countries in the implementation of the projects proposed, and

(d) to give its opinion on the contacts to be established between MEDRAP and the project proposed for the Black Sea, between these projects and the GFCM Cooperative Programme of Research on Aquaculture (COPRAQ), and finally between MEDRAP and the Regional Project for the Development and Management of Fisheries in the Mediterranean.

110. As far as this last point is concerned, it was proposed that COPRAQ be closely and actively associated with MEDRAP in the capacity of scientific adviser, that MEDRAP provide support to the organizations participating in COPRAQ, and that the latter conduct their research according to development needs. The Council added that, taking into account the similarity of the problems, the interconnexion of the MEDRAP and Black Sea projects should be studied with all due attention. The Council further expressed the wish that coordination be established between MEDRAP and the Regional Project for the Development and Management of Fisheries in the Mediterranean in order to make better use of available expertise (e.g., in fishery dynamics) and to consider on a broad basis the problems of exploiting living resources in the littoral area.

111. The representative of Bulgaria referred to the efforts made by his country to develop aquaculture and stressed the importance, already noted in the project document, that the Black Sea countries attach to the Black Sea project.

112. The representative of Algeria drew attention to the disparities existing among the countries of the region as far as the necessary structures for aquaculture development were concerned. These inequalities should be taken into account in MEDRAP activities. It was pointed out in this context that the purpose of MEDRAP was to help the member countries to set up national structures. Each country would be assisted for the pilot project chosen in liaison with the coordinator.

113. The representative of UNDP confirmed the interest of his organization in MEDRAP, which was expected to receive final approval shortly after examination of the financial conditions. He welcomed the association of COPRAQ with MEDRAP; it would, in fact, enable optimum use of resources and funds to be made thanks to the scientific and technological support of the institutions of the region specialized in aquaculture.

114. The Council approved the projects as well as the principle of association between MEDRAP and the Black Sea project, close collaboration between COPRAQ and MEDRAP, and bringing MEDRAP closer to the Regional Project for the Development and Management of Fisheries in the Mediterranean.

B. Cooperative Programme of Research on Aquaculture (COPRAQ)

115. Mr Z. Filić, Vice-Chairman of the Fourth Session of COPRAQ held in Barcelona in October 1979, outlined the main topics and the conclusions of that Session.

116. The development of aquaculture research during the last ten years can be summed up as follows: after basic studies on the biology of fish species, research has been mainly directed toward the problem of reproduction of fish and crustaceans. At present, as a result of the development of fish farms, it is the nutritional and pathologic aspects which are being studied by the research units. Environmental problems have also been tackled to study measures for protecting fish farming areas from external pollution and to analyse the impact of aquaculture itself on the environment.

117. The conclusions and recommendations of the Fourth Session of COPRAQ fall into two categories:

(a) Research on applied nutrition and pathology should be developed; in this connexion, it was recommended that studies on the identification, prevention and treatment of diseases, in particular bacterial diseases, should be intensified;

(b) COPRAQ should be associated with the work of commissions or projects dealing with these problems, especially those of the European Inland Fisheries Advisory Commission (EIFAC) and the MEDRAP Regional Project; as far as EIFAC is concerned, one of the most evident interests of this rapprochement lies in the considerable amount of work accomplished by this commission on freshwater fish diseases; the methodology thus acquired could be useful for marine aquaculture research.

118. As far as MEDRAP is concerned, COPRAQ considered that it represented in part a concrete expression of its efforts over the last ten years. It therefore hoped to be intimately and actively associated with the project. This association should take the form of provision to MEDRAP of scientific advice and consultancy, whereas MEDRAP could stimulate and guide the activities of COPRAQ member institutions by furnishing various resources.

119. The Council endorsed these conclusions, in particular those relating to the orientation to be given to research or proposing close association of COPRAQ with MEDRAP.

C. Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean

120 The Council took note of the progress report on the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean since its inception in October 1975 to date (see Annex J).

121. The pilot-project phase of basic studies and monitoring of metals and chlorinated hydrocarbons in marine organisms and of research on the effects of pollutants on marine populations and ecosystems, which are carried on by about 40 Mediterranean research centres and coordinated by GFCM, will come to an end in March 1981.

122. The results obtained during this period will be presented at an intergovernmental meeting to be convened by the United Nations Environment Programme in March 1981.

123. A long-term programme of about five years for monitoring certain pollutants in selected areas of the Mediterranean is scheduled to follow the pilot-project phase from April 1981.

VIII. OTHER MATTERS

A. Proposed programme of meetings for the next intersessional period

124. The Council approved the following programme of meetings for the period from its Fifteenth to its Sixteenth Session

(i) Technical consultation on age-reading methods

Montpellier, 30 March - 4 April 1981 - Coordinators: Y. Aldebert and G. Lasserre

(ii) Technical consultation on the utilization of small pelagic species

Madrid, May 1981 - Coordinator: A. Moral

(iii) Technical consultations on stock evaluation

- Adriatic - Ancona, May 1981 - Coordinator: G. Bombace
- Black Sea - Varna, August or September 1981 - Coordinator: L. Ivanov

This meeting will deal with all resources.

- Statistical Divisions Balearic and Gulf of Lions - Casablanca, end of 1981 - Coordinator: R. Biaz
- Central Mediterranean - Tunis, February 1982 - Coordinator: M. Bouhlel

(iv) Working Party on Acoustic Methods for Fish Detection and Abundance Estimation

Palma de Mallorca, beginning of 1982 - Coordinator: P. Oliver

(v) Cooperative Programme of Research on Aquaculture

End of January 1982

(vi) Working Party on Resource Appraisal and Fishery Statistics

Rome, April, 1982

(vii) Seminar on measurement of fishing effort and mortalities

Rome, June 1982

(viii) Technical consultation on the regulation of fishing effort

Rome, June 1982 - Coordinators: K. Tamhina and J.-P. Troadec

(ix) Committee on Resource Management

Rome, June 1982

The three meetings under (vii), (viii) and (ix) will immediately follow each other.

125. The Secretariat stated that the abovementioned activities required human and material resources far beyond FAO's present means. As indicated in paragraph 84, the budget of the FAO Regular Programme did not make provision for strengthening the resources that FAO made available to the General Fisheries Council for the Mediterranean. In the future, the solution may be found by implementation of the Regional Project for the Development and Management of Fisheries in the Mediterranean. Pending the possible start-up of this project, temporary solutions would have to be sought. The taking-over by the host countries of a large part of the expenses occasioned by the technical consultations and the nomination of national organizers should provide at least a partial solution to this problem. But it would still be difficult for the Secretariat to provide the necessary technical backing for all the scheduled meetings. For this reason, the Council expressed the hope that countries inviting

consultations could make available special funds to GFCM for recruiting consultants who would lend a hand to the Secretariat to ensure that all the information collected was suitably analysed, interpreted and presented. The Council recommended that its Executive Committee, at its meeting in the middle of the forthcoming intersessional period, study the problems raised by the organization of the proposed meetings and take a decision at that time, in the light of information then available on funding possibilities, as to the possible cancellation of those meetings for which the necessary resources had not yet been found.

126. Taking into consideration the work to be done by the technical consultations on stock evaluation, the Council deemed it useful to review the terms of reference of its Working Party on Resource Evaluation and Fishery Statistics. The terms of reference will be as follows:

(a) Follow the work of the consultations on stock evaluation and complementary activities such as fishery data collection, organized within the GFCM framework;

(b) follow the progress achieved at national and regional levels in setting up the statistical system recommended by GFCM;

(c) study the fundamental scientific problems which may be encountered by research on Mediterranean fishery resources and give views to the Council and to its member countries on the new problems to be tackled, and on the methods most suited to the study of Mediterranean stocks, taking the available facilities into account;

(d) study the needs of the Mediterranean countries for strengthening their facilities and structures for research on fishery resources and data collection and advise the Council on the most appropriate strategies.

B. Reports of technical consultations

127. The Council stated that the reports of technical consultations were of interest to all member nations. It requested the Secretariat to see to it that all these reports are published in English and French.

C. Statement by the observer of the International Juridical Organization

128. The observer of the International Juridical Organization (IJO) called the attention of the Council on the legal implications of the Third Conference on the Law of the Sea, in particular on the need of updating and harmonizing national regulations, facilitating exchanges of juridical information and revising regulations on joint ventures.

## IX. PRESENTATION AND DISCUSSION OF TECHNICAL DOCUMENTS

129. Mr M. Ferretti submitted a report entitled "Essais de pêche avec un chalut pélagique" (Fishing trials with a pelagic trawl). The report gave the results obtained with a "rope" pelagic trawl designed to increase the catch by using currently available engine power and to decrease fuel consumption per ton of catch.

130. Mr R. Biaz commented on a paper "La pêche et la recherche halieutique en Méditerranée marocaine" (Fisheries and fishery research in the Moroccan Mediterranean) which he had prepared for the Session. It was clear from this document that the Moroccan Mediterranean is not such a poor sea as was believed. Large concentrations of trumpet fish (Macrorhamphosus spp.) and appreciable concentrations of sparids are to be found there. As far as pelagic species are concerned, an inversion of the relative importance of sardine and anchovy in the catches has been noticed during recent years; the fishing of this latter species has increased considerably, mainly on account of the high price it fetches in the canning industry. Mussel aquaculture has been attempted; although the results were positive as far as growth was concerned, the experiment had to be abandoned on account of technical difficulties.

## X. ELECTION OF CHAIRMAN AND VICE-CHAIRMEN

131. A Nomination Committee met on Wednesday, 24 September. It proposed to the Council the following members of the Bureau, whom the Council approved:

| | |
|---|---|
| Chairman: | Mr G. Bombace |
| First Vice-Chairman: | Mr S. Alfirević |
| Second Vice-Chairman: | Mr R. Biaz |

## XI. DATE AND PLACE OF SIXTEENTH SESSION

132. The delegate of Cyprus invited GFCM to hold its sixteenth session in his country, subject to official confirmation from his Government. The Council accepted the proposal by acclamation. The period of 20-25 September 1982 was fixed for the session.

## XII. ADOPTION OF THE REPORT

133. The Report of the Fifteenth Session of the General Fisheries Council for the Mediterranean was adopted on 26 September 1980.

Annex A

AGENDA

1. Opening of the Session
2. Adoption of the Agenda and arrangements for the Session
3. Symposium on Management of Living Resources in the Mediterranean Coastal Area
   - 3.1 Inventory of the coastal area
   - 3.2 Present exploitation of resources
   - 3.3 Resource protection and enhancement
   - 3.4 Coastal integrated management problems
   - 3.5 Local examples of marine biological resource management
4. State of fishery resources
   - 4.1 Fishery statistics and biological sampling
   - 4.2 Resource evaluation
5. Resource management and utilization
   - 5.1 Implementation of Recommendation I/76/1 on mesh size
   - 5.2 Regulation of fishing effort in trawl fisheries
   - 5.3 Utilization of small pelagic species
6. Training
7. Proposed Regional Project for the Development and Management of Fisheries in the Mediterranean
8. Other regional activities
   - 8.1 Regional Mediterranean and Black Sea aquaculture development projects
   - 8.2 Cooperative Programme of Research on Aquaculture
   - 8.3 Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean
9. Any other matters
10. Presentation and discussion of technical documents
11. Election of officers
12. Date and place of the Sixteenth Session
13. Adoption of the Report

Annex(e) B

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# LIST OF PARTICIPANTS

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Annex C

# REPORT OF THE SYMPOSIUM ON MANAGEMENT OF LIVING RESOURCES IN THE MEDITERRANEAN COASTAL AREA

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INTRODUCTION

On 18, 19 and 20 September 1980 a Symposium was held in Palma de Mallorca on Management of Living Resources in the Mediterranean Coastal Area in conjunction with the Fifteenth Session of the GFCM. Professor M. Amanieu, who was responsible for preparing the Symposium, acted as Chairman.

The prospectus circulated to the GFCM member countries giving the introductory statement on the topic and the programme will be found in Appendix 1.

Fifty-one participants attended the Symposium. Seven summary reports were presented in the first part of the Symposium. The subject of these reports had been established by Prof. Amanieu in liaison with the GFCM Secretariat. Their drafting and presentation was entrusted to guest speakers. In addition, communications were presented in the second part of the Symposium to provide GFCM with local management examples in various countries bordering on the Mediterranean. The last day of the Symposium was devoted to debate on the individual topics and to the drafting of summaries and conclusions.

Appendix 2 contains the list of documents and communications presented during the Symposium.

The report presents the conclusions grouped around the five main items which emerged from the programme, statements and discussions and which are as follows:

(i) Definition, bionomics and resources of the Mediterranean coastal area. Inventory of resources and mechanisms of exploitation

(ii) Present exploitation: lagoons and coastal fisheries

(iii) Prospects: artificial reefs and aquaculture

(iv) Regulations and laws governing the exploitation of fishery resources

(v) Integrated management of the coastal area.

## I. DEFINITION, BIONOMICS AND RESOURCES OF THE MEDITERRANEAN COASTAL AREA

### 1. Identification of the Problems

#### 1.1 Definition of the coastal area

The reports and discussions on this item showed:

(a) that a strict definition of the coastal area, resources and exploitation was impossible; the broad definition given in the prospectus was taken up by some authors, either in its entirety or emphasizing specific criteria - physical (distance from the coast, depth), biological (fish populations) or technico-sociological (artisanal fisheries);

(b) that too strict a definition was to be avoided, for the limits corresponding to the different criteria did not coincide and the inshore fishery system was not independent of the contiguous terrestrial and marine systems;

(c) that the objective reality of a coastal area situated between the mainland and the open sea, where multiple methods of utilizing the environment and its resources were concentrated, was not contested by anyone.

1.2 Bionomics of the coastal area

It was agreed that bionomics constitute a rational inventory of biologic groupings which were identified, independently of their geographic or systematic differences, as functional units compatible from an ecological point of view. Bionomic concept and work generally are a matter for specialists. However, the relevant concepts and results of research must be rapidly communicated to the users, professionals or administrators. The effort of disseminating research, that is to say, making it perceptible to those who use the results, should lead to a generalization of bionomics of coastal fisheries, not strictly of coastal ecosystems.

1.3 Resources and production

The resources at present exploited (coastal and lagoon fisheries) and expansion prospects of artificial reefs and aquaculture will be discussed elsewhere. We therefore deal here with a more general level: the inventory and knowledge of resources.

(a) There are different levels of resources, depending on whether one considers primary, secondary or higher levels of production. The study of these resources is based on different methodologies (primary production is not assessed as exploitable production), often applied by different teams (the fundamentalists deal more with primary and secondary production and the applied institutes with tertiary production). Moreover, these teams work according to different time and space schedules.

(b) In the coastal area more than in the open sea, the resources are dependent upon the environment (water regime, pollution). It is therefore more difficult to estimate them and even more to adjust in a precise way the fishing effort to the fishing potential.

(c) It follows from the preceding paragraphs that the resources of the coastal area are particularly vulnerable.

(d) In most cases the resources are little known, catch statistics are incomplete and not sufficiently reliable, and the physical characteristics of the areas studied are not clearly defined.

2. Proposals

Taking into account the preceding comments, reports and discussions, it would seem necessary to stress the following points:

(a) Efforts must be pursued to motivate research, including basic research, in fishery biology and economics; research workers should make their language and their work accessible to users; inversely, users must make an effort to understand the results of research and take their implications into account.

(b) Inventories of the coastal resources in previously defined sectors (in time and space) need to be improved; from the methodological point of view, an effort should be made to enable comparison between the different levels of production.

(c) The sociologic importance of the exploitation of living resources in the coastal area must be quantified in cases where it is difficult to express it in strictly economic terms.

(d) The management of inshore fisheries must be considered in a broad context: that of the coastal system - which includes all the ways of utilizing the system as well as economic factors - in the context of which fisheries *sensu lato* are situated.

(e) The management of inshore fisheries constitutes a homogeneous system within which the subdivision into different activities (fisheries, lagoon management, aquaculture, etc.) responds to analysis and presentation needs but not to the procedure which should be followed in studying the overall behaviour of the system. It thus appears essential that at the level of people, programmes and institutions, the necessary coordination should be established between fishermen, administrators and research workers.

## II. PRESENT EXPLOITATION: LAGOONS AND COASTAL FISHERIES

### 1. Identification of the Problems

#### 1.1 Socio-economic importance of coastal and lagoon fisheries

The following points emerged from the discussions on this topic:

(a) In various Mediterranean countries the volume of artisanal fishing in coastal areas and lagoons, particularly when shellfish and all forms of aquaculture *sensu lato* are included, is comparable to and perhaps greater than catches of demersal fish by trawl.

(b) This importance is even more obvious if one compares the economic value of production, which is a more appropriate approach.

- In a general context, the high market value of Mediterranean products must be stressed; this value is enhanced by their quality and strong demand. It is worth noting that the products of Mediterranean fisheries have an overall economic value which is far greater than the world average.

- The existence of short commercial circuits has also the effect of giving the producer a higher profit for his output.

(c) It thus appears that in several countries, Mediterranean fishermen have a substantial income, comparable to, and often greater than, the incomes earned by similarly qualified workers in agriculture or industry.

(d) The discussions made it quite clear that fisheries and artisanal fishermen constitute efficient economic agents whose survival is far from being justified only by social stability or historical considerations.

#### 1.2 Biological importance of coastal and lagoon areas

Coastal and lagoon areas have a considerable biological importance because they constitute spawning and rearing areas and contribute to the recruitment of populations exploited in the open sea by industrial demersal and pelagic fisheries.

The question was thus raised to what extent an intensive exploitation of coastal and lagoon areas by fishing and aquaculture could be compatible with maintenance of the present level of open-sea demersal fishing.

### 2. Proposals

#### 2.1 Knowledge of the resource

(a) Location and area of lagoon sites. It would be advisable to have better assessments of the area of lagoon and freshwater sites - or "wet areas" which could be used for extensive and intensive aquaculture.

(b) Knowledge and description of sites for future management, stressing in particular the nature of the waters (hyper- or hyposaline), the existence of permanent or temporary connections with the sea, inflow from watersheds, etc.

2.2 Evaluation of the resource

Catch statistics must be made available. It is not always possible to differentiate between catches in coastal and open-sea areas. Reliable assessments of production levels and fishing intensity call for detailed data on artisanal catches, broken down by fishing gear and site, as well as on catches of the same stocks in the open sea. These assessments should be based on detailed and comparable catches per unit of effort.

2.3 Management and control of the resource

(a) Many experiments have been carried out in lagoon management, but information is scattered and difficult to obtain. The preparation by FAO of a manual on lagoon management summing up the experiments (in particular, on hydrological conditions and on fishery resources) in the Mediterranean would be of very great interest.

(b) Allocation of sites and areas according to ways of utilizing the coastal and lagoon area. The allocation of areas earmarked for activities other than fishing, according to their need and importance (navigation lanes, for example) would allow fisheries to occupy larger areas, thus diminishing conflicts between different ways of exploitation.

(c) Allocation of the resource according to the number of fishermen it can support, allowing them an appropriate income, and guaranteeing them a social and professional future.

(d) Control of the resource and regulation of its exploitation rate and method.

III. PROSPECTS: ARTIFICIAL REEFS AND AQUACULTURE

1. Introduction

The Symposium examined development possibilities under comprehensive management aiming at the exploitation of living resources, the problems posed by this development and recommendations for future action.

The Mediterranean region has very favourable conditions for aquaculture development, thanks to the potential of brackish waters (one million hectares of lagoons or semi-enclosed areas) and inshore waters.

This potential could be developed along two main lines:

(a) Management of the lagoon areas whose present output of about 16 000 t of fish and 50 000 t of shellfish could, on the basis of biological considerations alone, reach 1 200 000 t.

(b) The installation of artificial reefs in areas near the coast (less than 50 m deep) would make it possible to extract food for human consumption from the energy at present dissipated in eutrophication processes.

These ideas are based on activities carried out in the region by different countries and described at the Symposium, and on experiments in other countries, in particular Japan, some of which were brought to the attention of the participants.

2. Identification of the Problems

The problems encountered in developing these new forms of management of living resources in the coastal area fall into three categories:

2.1 Technological problems

These problems are still numerous, but they should be tackled by field studies and research rather than by laboratory work. It appears in fact that it is the large-scale projects which present difficulties at present, either because they have not yet been carried out in sufficient number or over large enough areas (artificial reefs, integrated lagoon fishery management) or because they are encountering problems owing to the passage to a higher level of activities (fry supply, manufacture of commercial feed, pathology of extensive or intensive fish farming).

2.2 Socio-economic problems

As in every new activity, the problems encountered in this sector are connected with the transfer of technology or, more specifically, are due to a lack of:

- training of senior fishery personnel, technicians and, above all, producers
- interchange of information or documentation existing in the region or available abroad (Japan, United States, etc.).

2.3 Environmental problems

These problems are of two different types:

(i) Interference by competing activities (urbanization, industry, pollution, tourism, etc.) with those connected with the exploitation of living resources in general; such competition is even more dangerous for aquaculture which is located in the coastal area where these activities are concentrated.

(ii) Interaction between the development of aquaculture in this area and inshore fisheries as a whole (possible decrease in the recruitment of juveniles by the closing of lagoons; obstacles to trawl fishing caused by artificial reefs, etc.).

Finally, it should be noted that the Symposium did not consider that there were any financial problems (investments) or a lack of basic scientific facilities, but rather that organizational and planning capacity was weak.

3. Proposals

The Symposium brought out the absolute necessity of promoting proper development and management programmes on a national and regional scale focusing on the following points:

(a) Training, information and technical support for administrative staff and professionals in coastal areas.

(b) Development on a larger scale of techniques studied at the experimental level, on a pilot scale or in other areas; reef or lagoon management, construction of hatcheries, etc.

(c) Evaluation of the impact of activities competing with aquaculture and those of aquaculture itself on inshore fisheries, so as to take the necessary measures to minimize the effects: buffer areas against pollution, soil occupation schemes, etc.

(d) Intensification of applied research for aquaculture development, mainly in the fields of nutrition and pathology.

(e) Particularly in regard to artificial reefs, in view of their interest for protection of the coastal area against abusive exploitation (limitation of trawlable areas) and their effect on the increase in the production of consumable products (especially

shellfish), the Symposium hoped that every consistent initiative to further this type of management would receive support. Economic results could only be profitably discussed when the experiments had increased in number and volume; but from the few tests made on a significant scale thus far, it would seem that investment costs could be amortized in a short period of exploitation (figures of two to four years were quoted in this connexion). This very promising effort should therefore be continued.

## IV. REGULATIONS AND LAWS GOVERNING THE EXPLOITATION OF RESOURCES

### 1. Identification of the Problems

Various problems relating to regulation of the exploitation of living resources in coastal areas were discussed. The following points were stressed:

(a) Historically, laws aimed first at protecting resources, then, more recently, at resolving conflicts between the fishermen; but laws which recognized that an uncontrolled fishing capacity was in many cases bound to exceed the resource potential were an exception, as were those designed to optimize the economic and social benefits which a fishery was capable of producing.

(b) For this reason, existing regulations regarding inshore fishing are in most cases unsuitable and therefore are not properly enforced. The great majority of the regulations was drafted before concepts of population dynamics were formulated. Moreover, they intended to solve immediate problems rather than help carry out long-range overall plans for fishery development.

(c) This resulted in a generally negative approach; for the reasons mentioned above, the regulations present purely restrictive aspects rather than tending toward improvement of the state of fisheries and of the economic and social benefits they could produce.

(d) Moreover, it was noted that laws in the past generally did not take into account the need to decide on the sharing-out of common resources among fishermen.

(e) It appeared that serious shortcomings are often noted in the adoption of essential decisions regarding the management of inshore fisheries, aggravated, in the case of existing regulations, by a frequent lack of means to enforce the regulations.

(f) The active collaboration of fishermen in respecting the rules is seldom obtained, either on account of badly formulated or perceived motivations or for fear of interfering with established sectoral interests.

### 2. Proposals

(a) It was noted that, in the case of stocks exploited simultaneously by various types of gear, interaction of their effects on the stocks implied that the formulation of regulations as well as management should be conceived on a global basis and not by gear.

(b) It was emphasized, however, that although management measures must be planned on a global basis, recourse to a breakdown of the area exploited should not be excluded so that some sectors can be assigned preferentially to certain methods of exploitation (offshore trawling, for example). Such allotment of fishing grounds may prove complex and politically difficult if the potential users of the resource are numerous.

(c) Stress was laid on the need of establishing local or regional advisory commissions grouping fishermen, administrators and research workers to formulate regulations and monitor the results. The commissions should deal with all types of fisheries, not just with coastal fisheries.

(d) The participants stressed that funds allocated for monitoring fisheries should be regarded as a profitable investment, not as an unproductive expenditure. Spain quoted the example of a monitoring system onboard commercial vessels and funded largely by the fishermen themselves. The profits derived from this operation greatly exceeded the outlay made.

(e) Emphasis was laid on the fact that the regulation of fisheries should not be considered a restrictive device but a means of stabilizing production at the optimum sustainable level, and thus capable of substantially improving the individual and overall income obtainable from fishing. Although the urgency of measures differs according to the degree of development of fisheries, it should not be forgotten that there exists a need for proper management whatever the level of production reached.

(f) Spain has prepared a draft project for regulating fishing by set and drifting gear. The details of the regulation were presented to the participants, who noted them with great interest.

## V. INTEGRATED MANAGEMENT OF COASTAL AREAS

### 1. Identification of the Problems

#### 1.1 Integrated management

Because of positive or negative interaction between fishery activities in coastal areas and other often competing coastal activities, the solution of problems peculiar to this type of fishery calls for an integrated approach taking such interaction into account.

Integrated management of the coastal area involves elementary management schemes (concerning, for instance, urban and industrial implications, lagoons and canals, pollution control, exploitation of the maritime sector, agriculture, tourism, including yachting and recreational fishing, etc.), forming part of a complex scheme reflecting interaction among the various components of the coastal system and the priorities adopted for its development.

The competence of the authorities responsible for fisheries is naturally restricted to the "fisheries" component of the system, but the harmonious integration of this component within the whole implies that these authorities evaluate the prospects and needs of coastal fisheries (catch and culture) and their interaction with the other uses of the coastal area, and make the results known to the bodies responsible for management of the coastal area.

The definition of the exact place to be reserved for coastal fisheries in development schemes for the coastal area is accordingly one of the essential elements of the process of reflection and action leading to the drafting of appropriate regulations and measures.

This definition and the evaluation of prospects it implies must be based on an objective analysis of the constraints determining those prospects (economic and social constraints, biological limits to future expansion) and of foreseeable complementary measures (e.g., conversion to extensive aquaculture of surplus manpower of the fisheries sector).

It is necessary to identify at the earliest possible stage the potential or manifest sources of conflict resulting from competing uses of the coastal area on land (tourism, pollution, town planning, industrialization, lagoon management) and at sea (industrial fisheries, yachting, recreational fishing and aquaculture). One must not neglect analysis of economic conflicts in investment policy - including research - on the one hand, and in marketing on the other, taking into account the effect of imports on local fisheries.

To benefit from a possible synergetic effect and broaden the range of possible substitutes for, or additions to, the development of coastal fisheries, the reflection process must also identify the sources of complementarity between coastal fisheries and other coastal activities, such as extensive aquaculture.

It is clear that there are differences between the problems concerning low coastlines and delta zones on the one hand, and those of rocky coasts on the other. The fishery expansion potential of the latter is much more limited.

1.2 Exploitation management

Such management must be based on a clear definition of long-term objectives (maximation of production, of individual or overall incomes and of employment, protection of certain categories of fishermen, etc.). The frequent conflicts between objectives must be identified, quantified and settled by clear choices or by efforts to find optimum compromises.

Short-term objectives (settlement of social conflicts and conflicts between occupations) may lead to temporary exceptions - but only temporary ones - from the strategies originally defined, since a series of temporary measures aimed only at minimizing conflicts in the short run has never constituted a management policy and does not help to prevent the most serious crises which threaten the very existence of the industry. In this connexion, mention was made of the misuse of subsidies to maintain unsatisfactory situations whereas subsidies should, in fact, be used to improve such situations and help the operators who are adversely affected by the changes.

One of the main objectives is to obtain for the coastal population and the communities living from fisheries a minimum individual income compatible with the possibilities offered by other occupations.

The essential prerequisite for achieving this fundamental objective is the adjustment of the fishing population to the production potential of the ecosystem being exploited. This adjustment should be achieved by limiting access to fishing (limiting the number of fishermen, the number of vessels, etc.). Such limitation, which involves difficult inspection and supervision problems, will be greatly facilitated by precise allocation of the elementary resources to groups of individuals (associations, cooperatives, communities, villages, etc.). This sharing of resources, the legal and socio-economic details of which will have to be studied, ought to limit the disastrous competition which is characteristic of the exploitation of common resources, and ought to facilitate supervision by very close involvement of the fishermen in the management of resources.

The fishing communities who know the ecosystem and who have a preferential right, at least a moral one, to use the coastal space, ought to receive the technical assistance (advice and training) and the financial assistance (credits) necessary for their reconversion.

The Mediterranean region lags far behind in this field and a great effort must be made to understand the problems and to use imagination in the search for solutions adapted to local requirements.

Subsidies might be necessary - on a temporary basis - for carrying out national management policies, but progressive improvement of the economic situation of the fishing industry will then entail the management of fisheries and the appropriate distribution of operating profits between the State and the fishing industry, on the one hand, and between the various socio-professional categories (fishermen and shipowners, for example), on the other.

The de facto appropriation of resources by coastal States, which is leading to a new regime of the law of the sea, makes it possible to consider further sharing of national resources and the littoral space among the different categories of potential national operators. By restricting the conditions of access to fishing, this would reduce the difficult problems raised by the management of so-called "common resources". In this connexion, emphasis was placed on the usefulness of generalizing land occupation schemes and extending them to marine areas.

2. Proposals

(a) The point which comes out most clearly is the growing awareness of the need for a global approach to the management of coastal fisheries. This approach involves the setting up (or strengthening) of effective links between exploitation, administration and research - essential for the circulation of information and vital for taking rapid decisions - which are properly geared to the realities of a threatened occupation and to effective application of the measures adopted.

(b) The principal stages in carrying out a management scheme are: choice of the objectives, formulation of a policy corresponding to the objectives, choice of a strategy adapted to available resources (planning), choice of the means (financing methods, legislation) and their implementation. At the same time, the indices for gauging the efficiency of management schemes and monitoring their impact must be identified and regularly measured (bioeconomic statistics) to ensure constant adjustment of the management policy.

(c) Better distribution of research efforts is necessary. In particular, efforts should be made to intensify socio-economic analyses of the present situation and the outlook in the different sectors of fishing and extensive coastal aquaculture. A very special effort must be made to study practical management schemes (methods of limiting access to fishing, criteria for allocating resources, licenses, profit distribution, organization of decision-making, conciliation and appeal procedures and structures, legislation, processes of progressive transition from present structures to desired structures, etc.).

(d) Substantial improvements in know-how utilization can be obtained by rationalizing and systematizing exchanges of information and cooperation among the institutions on which the power of decision is based (or should be based). For example, in the field of research alone, cooperation between dynamicians and aquaculturists would permit better definition of the prospects and of the most promising types of extensive aquaculture. The shortcomings noticeable in the organization and functioning of the decision-making and support structure (administrations, applied research laboratories) absolutely must be corrected in order that full use can be made of available knowledge. The use of such knowledge would perhaps make it possible to prevent the promulgation of regulations which are unsuitable, inapplicable and therefore not applied.

(e) It must be emphasized that there is no justification for research involving excessive scientific precision. The example of the management of Bardawil Lagoon proves that global management and decisions taken at the right time are conducive to improvement and that certain deficiencies in scientific knowledge can have a much less critical impact on the final result than is usually thought.

Appendix 1

SYMPOSIUM ON MANAGEMENT OF LIVING RESOURCES IN THE MEDITERRANEAN COASTAL AREA

Palma de Mallorca, 18 - 20 September 1980

PROSPECTUS

## I. Theme

The theme of the Symposium (see the attached Programme) will be the Management of Living Resources of the Coastal Area of the Mediterranean.

The term coastal area means the maritime and lagoon strip extending between the mainland and the deep sea. Several criteria can be combined to define this area, e.g. geographic (3 mile area), bathymetric (arbitrarily demarcated depths), technological (small scale fishery), or socio-economic (exclusive artisanal small scale fishery zone). Taken separately none of these criteria is entirely satisfactory. However all the professional, administrative or scientific authorities recognize the existence of a broad coastal strip where exploitation of living resources is of a character specific to that area both in its activity and in the conflicts opposing it to the development of land activities (e.g. town planning) or offshore fishery. The purpose of the Symposium will be, precisely, to afford a clear grasp of this definition of the coastal area as it is experienced practically, and to identify the group of scientific, technical, regulatory and socio-professional problems it presents.

The term management must be understood in a broad sense which can refer either to problems of physical management (opening of channels, creation of fisheries, installation of reefs, etc.), regulations (establishment of closed areas, limitation of sport fishery, regulation of artisanal fishery, etc.) or socio-economic problems (private ownership of marine areas, pooling of exploitation resources, etc.).

Living resources means either traditional resources, mainly those of artisanal fishery, or those which have been subject to more recent development, especially through aquaculture in the broad sense. Naturally all classification groups (plants, molluscs, shellfish, fish) as well as all exploitation methods (gathering, extensive exploitation, intensive aquaculture) could be mentioned. Instead the discussions will be confined to food resources, since exploitation of the biomass for energy purposes is not included in the Symposium programme.

Lastly, the organizers hope that the participants can bring to light, as represented in their personal experience, the complementary as well as the conflictual aspects resulting from exploitation of resources through fishery and aquaculture.

## II. Organization of the Symposium

Mr. M. Amanieu, Professor of the Université des Sciences et Techniques du Languedoc, has kindly agreed to supervise the organization and conduct of the Symposium, especially as regards its scientific aspects. In particular, Mr. Amanieu will supervise the preparation, by invited authors, of reference documents on items and sub-items A to D of the programme.

The Symposium will have a duration of two and a half days from 18 September at 9.30 h to 20 September at 12 h.

The first part will be devoted to a topical presentation of the problems and will cover items A, B and C of the programme. Statements having a maximum duration of 45 minutes will

be presented by one of the authors who will give a summary of the subject, possibly amplified by documents written and supplied by the participants. All the participants are therefore asked to provide the Secretariat of the GFCM with 80 copies of the documents (see attached "Instructions for preparing manuscripts") which they wish to have mentioned either in the summary statement given by the author or in the discussions, no later than 1 July 1980.

The second part will be devoted to examination of examples of integrated local management. It will begin with an introductory statement by one of the authors concerning item D of the programme. This will be followed by several communications concerning local examples presented by each author in a verbal statement limited to 15 minutes and followed by discussions. The headings listed under item E are given as a general outline applicable to each of these statements. However the list of these items, E.1 to E.7, is exhaustive and communications only partly covered by these items will be welcome. The framework of item E should therefore be regarded as broad and not restrictive. However, the Secretariat hopes that the examples presented can represent real and concrete experiences (whether successful or not) rather than an academic analysis of general situations. Participants wishing to present a communication in the framework of item E of the programme should also submit 80 copies of their document to the Secretariat of the GFCM no later than 1 July 1980. The communications presented will be submitted for examination by an editorial board which will decide on their eventual publication in the series GFCM Studies and Reviews, either in their entirety or in abstract form.

III. Illustrative poster panels

In order to facilitate the exchanges and discussion, especially on the statements contemplated in item D of the programme, the authors are asked to prepare panels summarily outlining the main points of their communications. It is recommended that the panels be standardized according to the following layout: height 1 m, width 0.70 m. Each author can present one or two panels as he wishes. These panels, in poster form, are to be prepared in advance by the authors who on their arrival will deliver the panels to the Symposium Secretariat so that they can be put up by the time of the opening. Each exhibitor, however, should give notice of the number (one or two) and title of the panels to be exhibited no later than 1 July 1980. It is suggested that the authors do not overcrowd the panels which should contain, in addition to a title, only hand drawn outlines or large size photos with brief captions. On the other hand, the panels should not constitute the support of a typewritten text corresponding to all or part of the communication itself.

PROGRAMME

A Inventory of the coastal area

1 Criteria of definition

2 Bionomics of the coastal area

3 Production levels

B Present exploitation of resources

1 Artisanal coastal fishery

2 Lagoon production improvement

C Resource protection and enhancement

1 Lagoon fishery management

2 Coastal fishery management and control

3 Future prospects: artificial reefs and aquaculture

D Coastal integrated management problems

E Local examples of marine biological resources management

1 Described areas

2 Character of resources (fishery, shellfish culture, aquaculture)

3 Economic importance of exploitation

4 Socio-economic context of exploitation

5 Management measures

6 Conflicts with other coastal economic activities

- industry, town planning
- pollution
- tourism

7 Balance of management operations

Appendice / Appendix 2

## LISTE DES DOCUMENTS ET COMMUNICATIONS PRESENTES AU SYMPOSIUM
## LIST OF DOCUMENTS AND COMMUNICATIONS PRESENTED DURING THE SYMPOSIUM

M. Amanieu, G. Lasserre. Niveaux de production des lagunes littorales méditerranéennes et contribution des lagunes à l'enrichissement des pêches démersales

M. Amanieu, G. Lasserre, D. Monti, J. Purwanto, O. Guelorget. Etude préliminaire de l'aménagement à des fins d'exploitation extensive d'une lagune saumâtre littorale, la lagune de la Sarrazine à Palavas (Hérault, France)

E. Arias, J. Camp, P. Suau, F. Vives. Projet de récif artificiel expérimental

P. Arte, M. Alcaraz, E. Arias, J. Camp, M. Estrada, P. Suau, F. Vives. Exemples locaux d'aménagement des ressources biologiques marines; le delta de l'Ebre

B. Baleux, M. Troussellier. Effets des apports polluants sur un écosystème lagunaire méditerranéen et conflits avec les productions aquicoles

M.H. Barahona-Fernandes. Les salines et leur usage éventuel pour l'aquaculture

C. Bas. Inventario de la zona litoral

G. Bombace. Note sur les expériences de création de récifs artificiels en Italie/Paper on experiments in artificial reefs in Italy

M. Bonnet. La pêche littorale dans le bassin occidental de la Méditerranée

M. Bouhlel. Aménagement des ressources vivantes de la zone littorale tunisienne

J. Crespo, A. García. Contribution to the knowledge of a littoral zone. South Mediterranean region

E. Debernardi. Réserve sous-marine de Monaco. Note sur les récifs artificiels

M.J. Debos, D. Cognie. Grossissement de loups et de daurades en cages flottantes dans les conditions naturelles des étangs

A. Demetropoulos. Aménagement et contrôle de la pêche côtière/The management and control of coastal fisheries

M.T. Dinis. Methods of incubating Dover sole (Solea solea L.) eggs

F. Doumenge. Problèmes de l'aménagement intégré du littoral méditerranéen

G.F. Frisoni. Exploitation et aménagement des lagunes de la Corse

A. García, J. Crespo, J.C. Rey. Description of a beach seine fishery ("boliche") and its exploitation in the south Mediterranean region

E. Grofit. La pêche côtière artisanale en Méditerranée orientale/The artisanal coastal fishery in the eastern Mediterranean

I. Jardas. State, exploitation and management of the coastal fishery resources of the Yugoslav Adriatic coast

P. Pallarés. Estudio sobre la pesquería del Mar Menor

S. Pisanty. Pêche et aménagement dans la lagune hypersaline de Bardawil/The fishery and management of the hypersaline lagoon of Bardawil

J. Querellou. Aquaculture

G. Ravagnan. Augmentation de la production des zones lagunaires: technologies disponibles et stratégies d'intervention/Productive development of lagoonal zones: available technologies and operational strategy

A. Tandler, R. Sherman. Food organism concentration, environmental temperature and survival of the gilthead bream (Sparus aurata) larvae

Annex D

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE

ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION

GFCM/XV/80/4
May 1980

Item 4.1 of the
Provisional Agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, Spain, 18-26 September 1980

# PRESENT STATE OF DEVELOPMENT OF THE GFCM STATISTICAL SYSTEM

## 1. INTRODUCTION

The GFCM Working Party on Resource Appraisal and Fishery Statistics at its seventh session (Rome, 30 January - 3 February 1978) arrived at the following conclusions:

(1) progress in the quality of the statistics was very slow and had so far enabled only rough estimates of the potential to be made, using very approximate indices of fishing effort;

(2) the main shortcomings identified at preceding meetings of the Working Party still remained the same, namely:

- scanty knowledge of the fishing effort. The Working Party drew the attention of the Council to the need to induce the member countries to make an effort in this respect, reporting their statistics of effort on the Statlant 37B forms;
- no distinction in the catch statistics between types of fisheries;
- no information on the location of the fisheries;
- catch statistics often unreliable (a large part of the catches not recorded, the main species not properly identified);
- lack of coordination between the different bodies collecting statistics in the same country;

(3) the GFCM list of species ought to be printed on Statlant 37A and B forms.

Furthermore, the GFCM at its fourteenth session held at Nantes in October 1978 took cognizance of the difficulties encountered in the proposed recruitment of a regional statistician and pointed out that it was up to the member countries to take action to ensure that the improvement of their data collection systems be given the necessary priority by the national authorities in their search for sources of external funding. This problem dates back to 1974 when the Council adopted Resolution GFCM XII/74/1 (followed in 1976 by Recommendation GFCM XIII/76/2) stressing the need for this recruitment. In an attempt to solve this problem the proposal that member countries participate financially (see document GFCM/XIII/76/17 submitted to the thirteenth session) was put forward at the suggestion of

the second session of the Resource Management Committee, held in June 1978, which stressed the need to examine all possible ways of financing: trust funds from member countries, free services of a full-time or part-time national statistician, various external contributions. In spite of the very poor quality of the fishery statistics in some Mediterranean regions, no solution has yet been found to this problem, all efforts to obtain the funding of a post of statistician having so far come to nought.

2. PRESENT STATE OF THE STATISTICAL SYSTEM

The first and most important observation in that the situation has made little substantial improvement since the seventh session of the Working Party on Resource Appraisal and Fishery Statistics.

2.1 Catch statistics: Statlant 37A forms are distributed regularly; however a number of difficulties and gaps still exist. These are as follows:

2.1.1 Delay in transmission of data. Certain countries (Greece, Tunisia, Turkey) forward their statistics with considerable delay amounting sometimes to two or three years. This serious deficiency makes it impossible either to supply a really up-to-date statistical bulletin or to go ahead with updating evaluations.

2.1.2 Inaccurate geographic allocation. It is still often difficult in many cases to determine exactly the geographic distribution of the catches, for example between Sardinia and the Ionian Sea (sub-areas 37.3 and 37.5) and between sub-areas 37.6 and 37.7 or 37.7 and 37.8.

2.1.3 Inaccurate identification of species. The statistics are sometimes reported under the names of wrong species. It is to be feared that for certain species the tonnages given include in fact a proportion of different but closely related species from the Atlantic or maybe even from the Red Sea. The Working Party had recommended that the Council arrange to have the list of Mediterranean species printed on the Statlant 37 forms. The Council has taken no decision in this respect but it must be recognized that the important differences in specific composition from one sector to another would entail the need to establish a very long list, containing many closely related species, thus greatly increasing the risk of inaccurate identification.

Moreover, it appears that at present the countries which transmit the statistics use local vernacular names for their own use and if they are forced to use scientific names this may give rise to problems. It would be advisable if each country were to make a general practice of using the FAO Species Identification Sheets for Mediterranean fishery purposes at the country level, in order to obtain correct standardized names before attempting to fill in the Statlant forms.

2.1.4 Bias in the estimation of total catches. It appears that in some cases only part of the landings are recorded by the official services, the total production thus being very largely underestimated.

2.2 Statistics of effort: The Working Party's recommendation to the Council that the use of the Statlant 37B forms be encouraged has not been followed up in fact, and the situation remains very worrying in this respect in spite of some attempts at improvement, very limited with regard to the length of time and area covered. Available data are always very rough and appraisals which have been attempted using these data are very approximate.

The general lack of data on fishing effort is so serious in the Mediterranean that this should be strongly emphasized. Member countries cannot hope in these conditions to progress towards a rational management of their fisheries inasmuch as the essential parameter, the mortality rate per fishery, and its evolution in time cannot be determined.

2.3 Biological data: The dynamic parameters available still remain rare even though a first utilization for assessment of the level of exploitation has been attempted by the Technical Consultation for Stock Assessment in the Baleares and Gulf of Lions statistical divisions (Palma de Mallorca, October 1979).

Data concerning the size structure of catches are not collected on a routine basis by most of the coastal countries. It is difficult in these conditions to attempt an analytical approach to Mediterranean fisheries to try to get round the difficulty represented by the lack of adequate statistics.

3. CONCLUSIONS

In spite of some too localized efforts to improve the situation, the GFCM statistical system still gives great cause for concern. The logistic system of collection (in spite of serious delays) and processing does work, and the publication of the GFCM Statistical Bulletin Nº 3 is a tangible proof thereof. However, considerable efforts have still to be made by most of the member countries:

1. to make their catch statistics more reliable

2. to transmit them in time

3. to begin to report adequate statistics of fishing effort

4. to begin to determine the structure of the landings by species and by size grades.

The time has come to prove that the political will to progress, on which the future of Mediterranean fisheries depends, does in fact exist, and concrete, integrated action should be taken for the purpose of promoting the study of fishery resources and the definition of optimum fishing conditions through a much greater effort at the national level and closer regional collaboration.

The problem regularly raised and never settled of the recruitment of a regional statistician could then perhaps be solved within the framework of the proposed Mediterranean Fishery Development and Management Project.

4. COUNCIL ACTION SUGGESTED

4.1 For the improvement of statistics of effort

The Council's attention is drawn to the fact that the Working Party on Statistics recommended at its seventh session that all countries should declare their statistics of effort on the Statlant 37B forms supplied by FAO. It should also be noted that, in other regions where the collection of effort statistics is also difficult, it was felt desirable to use, in addition, a form of catch per unit of effort data to be used by the laboratories. A form of this kind was prepared, in particular, for use in the fishing area 34 (Eastern Central Atlantic).

The Council is invited to request its Working Party on Resource Appraisal and Fishery Statistics to study the desirability of following a similar approach for the Mediterranean and to promote the utilization of this form in addition to Statlant 37B forms. The Working Party should then report to the Council so that action could be taken, if necessary.

4.2 For the improvement of catch statistics by species

In order that these statistics may be improved and the results of printing the list of Mediterranean species on Statlant 37A and B forms assessed, it is proposed that the Council recommend that its Working Party on Resource Appraisal and Fishery Statistics include this item on the agenda of the next session. This should provide an opportunity of reviewing

the way in which these statistics are reported at present (on Statlant 37A forms or not) and the specific names used (vernacular or scientific). It would also enable a first assessment to be made of the actual results which can be expected from this innovation.

4.3 For the recruitment of a regional statistician

It is urged that the Council pay careful attention to the proposed regional project and take account in its decision of the fact that the implementation of this project is perhaps the only opportunity still available to settle this problem - which is always raised and never solved - as satisfactorily as possible.

Annex E

EXTRACTS FROM THE RECOMMENDATIONS ADOPTED BY THE TECHNICAL CONSULTATIONS FOR STOCK ASSESSMENT AND THE WORKING PARTY ON ACOUSTIC METHODS FOR FISH DETECTION AND ABUNDANCE ESTIMATION

A. Technical Consultation on the Assessment and Management of Black Sea Turbot (paragraph 19)1/

With the view to rapid improvement of the assessment and management of Black Sea Turbot stocks, the Consultation recommends that in future special attention be given by Bulgaria and Turkey to the following problems:

(i) Improvement of statistical data:

- improvement of the collection of statistics and, in priority, of the annual catches by principal species and by geographic divisions, in accordance with the standards of the statistical system of the GFCM;
- revision of the Turkish statistics published in the GFCM Statistical Bulletin;
- annual exchange of statistical data between the two countries

(ii) Evaluation follow-up:

- strengthening of the Turkish research programme on this matter;

(iii) Protection of juveniles smaller than the minimum legal size;

(iv) Study of distribution and migrations:

- each country should consider the possibility of undertaking joint tagging experiments;

(v) Routine exchange of publications on marine sciences and fishery research; strengthening of relations between scientists working on the same subject;

(vi) Organization of a second consultation two or three years after the first one.

B. Technical Consultation for Stock Assessment in the Balearic and Gulf of Lions Statistical Divisions (paragraphs 70 to 79)2/

The Consultation recommends with regard to research:

(i) The carrying-out of an intensive study of the different effort measurements used in the Mediterranean. Responsibility for this study has been accepted by the laboratories in Algiers, Barcelona, Casablanca and Palma de Mallorca;

(ii) The development, in all countries, of programmes for the sampling of catches of the principal species;

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1/ FAO Fisheries Report No. 226

2/ FAO Fisheries Report No. 227

(iii) The intensification of studies on the fundamental biological parameters. Responsibility for these studies has been accepted by the laboratories in Algiers, Barcelona, Casablanca, Palma de Mallorca and Sète;

(iv) The organization of coordinated programmes for the assessment of pelagic resources between Algeria, Morocco and Spain, and any other interested partner;

(v) The extension to Algeria of the subdivision into subsectors of the statistical subarea 37.1. The precise breakdown will have to be studied with the Algerian research workers at the forthcoming session of the technical consultation or of the Working Party on Resource Appraisal and Fishery Statistics;

(vi) That the Spanish services collect the data on catches and fishing efforts relating to landings by Moroccan vessels in Ceuta and Melilla.

With regard to management, the Consultation recommends:

(i) That the present fishing effort be reduced progressively to the level of the average maximum catch for the following species and sectors:

- Poutassou (sectors 37.1.2 and 37.1.3)
- Red mullet (37.1.6) and sardine (37.1.5 and 37.1.7)
- All demersal species (37.2.2);

(ii) That economic studies be carried out to define the economic optimums for the multispecies stocks;

(iii) The analysis of the biological and economic consequences of the increase of the mesh size used for hake fishing in sectors 37.1.2 (Castellón) and 37.1.6 (Balearic Islands) on the entire catch, having special regard to the economically important secondary species.

The Consultation finally recommends that another meeting be organized after a period of two years.

C. Technical Consultation for Stock Assessment in the Adriatic (paragraph 44)[1/]

The Consultation recognized that such progress as may be achieved in this region will depend to a large extent on the cooperation that may develop in the region. It attaches great importance to the implementation of the programme of coordinated research in the Adriatic and consequently it recommends:

(i) That the persons responsible for fishery statistics should remain in direct, close and frequent contact in order to keep themselves informed of the reciprocal progress achieved in this field and, where necessary, to design and establish compatible systems for data collection and processing;

(ii) The establishment of a sampling network in the main landing ports and, if necessary, on the fishing vessels themselves in order to obtain the size and age structures of the species caught;

(iii) That the methods of direct assessment be not only pursued, but also coordinated at sub-regional level and intensified in order to acquire the geographic coverage and observation density necessary for more precise quantification of the factors measured (density, biomasses, compositions, etc.).

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1/ FAO Fisheries Report No. 239

The Consultation recommends in particular the definition of common geographic zones of observation to permit increased precision of the assessments through comparison of the results obtained by the different methods.

(iv) The carrying-out of intercalibration experiments between the acoustic equipment of the various laboratories and the harmonization of the echogram analysis methods, the cruise plans and the sampling strategies;

(v) That the Working Party on Resource Evaluation and Fishery Statistics and the scientific institutes of the Adriatic be supplied with the results concerning:

- adult mortality in the principal pelagic stocks (sardines, anchovies)
- larval and post-larval mortality
- the long-term fluctuations in the production of the pelagic stocks of the Adriatic;

(vi) The compilation of a basis of biological data containing the information most relevant to resource appraisal and including the essential descriptive elements of the environment and the major biological parameters of the principal species fished, according to the scheme of allocation of responsibilities proposed by the Consultation;

(vii) That a team of legal experts meet regularly to work on this question and monitor the implementation of the measures proposed at both national and sub-regional level.

(viii) That a second consultation be organized in Ancona, in May 1981.

D. First Session of the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation (paragraph 15)1/

Recognizing the need for a good electronical calibration of the acoustic system, the First Session of the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation

recommends that all measurements are executed as listed in Burczynski (1979) and SIMRAD's specifications for echosounder and echo-integrator; in addition, that measurements on the pulse repetition rate and the dynamic range of the echo-integrator and echosounder be made, and that the TVG function be checked as described by Craig (1973);

further recommends that the constant of the echo-integrator input with a certain voltage provided by an external measuring generator be determined;

it also recommends to use a steel sphere of 6 cm diameter (specification SIMRAD) for calibration and intercalibration for echosounders with frequencies of 70 and 120 kHz.

(N.B. The result of investigations to determine a good size standard target for low frequency echosounders (e.g., 38 kHz) is awaited from SIMRAD.)

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1/ FAO Fisheries Report No. 231

Annex F

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| | FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS | |
| | ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE | GFCM/XV/80/9 June 1980 |
| | ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION | |

Item 5.1 of the
provisional agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, Spain, 18-26 September 1980

# REPORT OF THE SURVEY ON MESH SIZES ACTUALLY USED IN THE MAIN MEDITERRANEAN TRAWL FISHERIES

1. At its fourteenth session held in Nantes in October 1978 the General Fisheries Council for the Mediterranean discussed the advisability of Recommendation I/76/1 endorsed in February 1976 by the GFCM Committee on Resource Management with a view to the adoption of a mesh with a minimum opening of 40 mm for trawl fisheries. While recognizing that some of the scientific data necessary to justify its adoption for all fisheries were still lacking, the Council acknowledged that, on the basis of available information and for practical reasons, a 40 mm mesh opening was to be recommended.

2. The Council expressed satisfaction at the fact that, on the whole, the Recommendation had been taken into account in the national regulations of the member countries. However, it expressed serious concern over the poor enforcement of these regulations which reflected both the reluctance of certain fishing communities to comply with this new regulation and the lack of an adequate control system.

3. In order to be in a position to monitor progress achieved at the national level and to obtain essential data for stock assessment, the Council asked the Secretariat to:

(i) request member countries, by means of a questionnaire, to provide data on the mesh sizes actually used in their main trawl fisheries and on the frequency and methods of control of the mesh sizes;

(ii) to make this information available to all member countries of the GFCM.

4. The GFCM Secretariat contacted the Directors of Fisheries of member countries by letter on 11 September 1979 and sent them a form to fill in, a copy of which is attached hereto.

5. Of the 19 countries thus consulted, only seven had replied by the date this report was drawn up. The information obtained is set out in the following table.

6. The answers to the questions concerning inspection procedures were as follows:

Cyprus: Occasional inspection by fisheries administration in the port and at sea; frequency not indicated; ICES gauge used.

Israel: Occasional inspection by fisheries administration and research laboratory in the port and on importation; frequency not indicated; ICES gauge used.

Italy: Administrative procedures are under way to promote the adoption of a ministerial decree enforcing the use of a triangular gauge. Taking into account the delays foreseen in the practical application of this law, it is considered that its enforcement will be possible within two years of the publication of the decree.

Malta: Occasional inspection on importation carried out by the Administration; frequency of checks not indicated; flat rectangular gauge used.

Syria: No answer regarding checks; flat triangular gauge used.

Tunisia: Checks by fisheries administration in the port about 12 times a year on 200 trawlers in operation; flat rectangular gauge used.

Yugoslavia: Routine inspection by the fisheries administration in the port or at sea; frequency of checks not indicated; an ordinary rule graduated in centimetres and lately the ICES gauge have been used.

| Country | Engine power of trawl fleet (hp) | | Mesh size actually used | |
|---|---|---|---|---|
| | Average | Range | Average | Range |
| CYPRUS | 232 | 160 - 310 | 34 mm | ? - ? |
| ISRAEL | 180 | 120 - 240 | $\geqslant$ 40 mm ? | 44 - 120 mm |
| ITALY | 50 to 430 | 4 - 2 000 | $\leqslant$ 40 mm | |
| MALTA | ? | 110 - 580 | 25 mm | ? - ? |
| SYRIA | ? | 130 - 365 | ? | 36 - 80 mm |
| TUNISIA | 270 | 160 - 510 | 40 mm | ? - ? |
| YUGOSLAVIA | 160 | 40 - 300 | $\simeq$20 mm | 20 - 60 mm |

Proposed Action by the Council

7. The Council is invited to comment on the poor reaction of the majority of member countries to the survey undertaken by the Secretariat at the request of its Fourteenth Session.

8. Although it is difficult to form an exact idea of the situation on the basis of the few answers received, the Council is further requested to take note of the very incomplete way in which the practical application of the Recommendation adopted four years ago seems to have been enforced.

9. It may wish to consider the proposals put forward by the Third Session of its Committee on Resource Management, held in Rome from 17 to 19 June 1980, regarding a procedure for the enforcement of Recommendation I/76/1 (see paragraphs 32 to 36 of document GFCM XV/80/9).

## MESH SIZE ACTUALLY USED IN THE MAIN MEDITERRANEAN TRAWL FISHERIES

Please fill one form for each main national trawl fishery based on the best information and knowledge available to you

FISHERY (as defined by the fleet and the stocks fished by it)

A Fleet: main characteristics of the trawlers

- average length .... metres (OAL ☐ or BPP ☐ )
- or approximative lengths of smallest and largest trawler: .... metres and .... metres
- or tonnage: mean .... GRT or range: from .... GRT to .... GRT
- or power: mean .... HP or range: from .... HP to .... HP

B Species: main species or groups of species and species composition (rough percentage of total weight)

| sought | caught | landed |
|---|---|---|
| _____ | _____ ( %) | _____ ( %) |
| _____ | _____ ( %) | _____ ( %) |
| _____ | _____ ( %) | _____ ( %) |
| _____ | _____ ( %) | _____ ( %) |
| _____ | _____ ( %) | _____ ( %) |
| _____ | _____ ( %) | _____ ( %) |

C GFCM statistical division where trawling is made:

D Range of depths within which the fleet normally operates: from .... to .... metres

MESH SIZE USED IN COD END

A Average opening for the fleet: .... mm

or range of trawl means from the smallest mesh (.... mm) to the largest one (.... mm)

B Twine used:

C Devices affecting the escape of fish from the trawl:

- external chafers: yes ☐ or no ☐
- others (specify):

D Gauges used:

- ICES ☐; flat triangular (wedge) ☐; flat rectangular ☐

- others (specify);

- or specifications provided by the trawl manufacturer ☐

FREQUENCY OF OBSERVATIONS

(One observation corresponds to the measurement of a series of meshes on one trawl at any one time)

A Routine ☐

in this case approximative number of observations: .... by year ☐ or by month ☐ corresponding to .... tons landed or .... trips made or .... trawlers operating.

B. Occasional ☐

INSPECTION PROCEDURES

A Location:

- in port ☐, at sea ☐, on imported gear ☐,

- others (specify):

B Inspecting authority:

- Fisheries Administration ☐, Research Laboratory ☐

- others (specify):

COMMENTS ON EFFECTIVENESS AND DIFFICULTIES OF ENFORCEMENT

ADDITIONAL COMMENTS

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE

ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION

GFCM/XV/80/13
June 1980

Item 5.3 of the
Provisional Agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, Spain, 18-26 September 1980

# PROGRESS REPORT ON THE COOPERATIVE PROGRAMME ON SMALL PELAGIC FISH UTILIZATION

## 1. INTRODUCTION

During the discussions on increased utilization of small pelagic fish species which took place at the Fourteenth Session of the GFCM in Nantes (16-20 October 1978), promotion of closer collaboration among the regional technological institutes through the GFCM was recommended. The intention was that, through collaboration, all workers would be aware of programmes which are in progress elsewhere, thus helping to prevent duplication as well as leading to possibilities of joint action. Institutes having a strong programme in a particular field would become focal points for collaboration. They would subsequently elicit interest from other institutes and keep in touch with interested parties. It was also hoped that by establishing their own programmes of collaboration, the institutes in the GFCM area would contribute to other FAO efforts on the better utilization of small pelagic fish world-wide.

As a starting point, it was recommended that the Secretariat should communicate with institutes in the region to determine priority programmes on which they would be prepared to collaborate. The GFCM undertook to stimulate the progress of such collaboration by coordinating action and ensuring the participation of countries with limited financial resources.

## 2. RESEARCH REPORTS FROM INDIVIDUAL COUNTRIES

As a follow-up to the recommendations of the Fourteenth Session, the Secretariat wrote to all countries to inquire about ongoing programmes on improved utilization of small pelagic species. In addition, interest in and suggestions for carrying out cooperative research between two or more institutes within the area were also sought. So far eight countries have expressed their interest in a cooperative programme and their willingness to participate in it. Their replies are given below.

### 2.1 Algeria

The Office algérien des pêches indicated that their main interest would be in studies to improve the quality of raw material and to speed up the processing of sardines and anchovies. They stated that their ability to perform such studies would be limited by the lack of facilities and equipment. They also proposed a system of coordination among interested institutes based on regular exchange of information.

### 2.2 Bulgaria

The Ribno Stopanstvo (State Economic Association) at Burgas indicated its interest in taking part in the programme. The main interest of the Ribno Stopanstvo would be the better utilization of Black Sea sprat and horse mackerel.

2.3 France

The Institut scientifique et technique des pêches maritimes (ISTPM) at Nantes has recently carried out studies on salted anchovy fillets and on the utilization and marketing of large (50-80 g) size sardines. At present, investigations are under way on the development of a non-sterile pack of fried or grilled sardines in vacuum-sealed polythene pouches, which they hope might be an alternative to icing fresh fish in order to reach potential markets. The ISTPM also indicated that they could carry out, on request, a research programme on technological aspects of small pelagic fish utilization and that trainees would be welcome. The Institute's capacity is 3 to 4 fellows at a time.

2.4 Israel

The Fisheries Products Laboratory at Haifa believes that the technology of smoking in a warm climate, energy preservation (hydrolysates, silage) and the detection of contamination are problems that could be the subject of joint investigation. They have also stressed the benefits of a collaboration including Egypt. They have recently completed a series of studies on Mirogrex, a sardine-like fresh-water fish from Lake Kineret (the Sea of Galilee) covering the following items: proximate composition, storage potential, quality improvement and development of new products (marinated, canned).

2.5 Italy

The Stazione Sperimentale per l'Industria delle Conserve Alimentari, at Parma, has recently finished investigations on salted anchovies and smoked sardines. They have also carried out investigations on pre-fried fresh or individually quick frozen (IQF) butterfly sardine fillets. Their work programme for 1980 includes investigations on (i) the influence of pH and storage temperature on histamine formation in fish species with a high free-histidine content; (ii) the effect of mechanical heading, gutting and filleting on the maturation process of salted anchovies; (iii) studies on smoking sardines including the development of a canned smoked product; (iv) studies on the selection of an adequate fish quality index (fresh, frozen, processed); (v) the influence of a raw material quality and freezing equipment on the quality of frozen products and (vi) vacuum concentration of boiled fish soups. Some of these activities could be carried out under a cooperative programme.

The Istituto Sperimentale per la Valorizzazione Tecnologica dei Prodotti Agricoli (IVTPA) at Milan has suggested the possibility of developing new products from anchovies such as a fish paste to be used as an ingredient of frozen meals and the production of a fish flour for human consumption.

At present the IVTPA is engaged in a local cooperative programme with fishery organizations near Ancona on the Adriatic Sea. Government agencies, private companies and fishermen's cooperatives are working together to ensure better utilization of local sardine catches, mainly through upgrading the commercial value of the products. Acting as the "scientific partner" of this joint effort, the IVTPA has recently carried out several studies on the sardine utilization mainly on the development of new products such as (i) IQF sardine fillets (raw, breaded, fried); (ii) chilled and canned smoked sardines; (iii) ready-to-cook and ready-to-serve products based on sardine paste (croquettes, hamburgers, fish balls) and (iv) stability tests on fresh and frozen sardines.

2.6 Morocco

The main interest of the Institut scientifique des pêches maritimes (ISPM) at Casablanca is concentrated on the handling and utilization of sardines and trumpet fish (Macrorhamphosus spp.). For sardine they plan storage studies on board the small fishing vessels of Agadir in order to demonstrate the importance of chilling (ice boxing and refrigerated sea water). During these experiments, to be carried out in 1980, they intend to investigate the influence of the chilling method on the quality of landed fish and on the selling price. They are also planning to perform studies on the production of fish paste and fish silage from trumpet fish.

The ISPM has also investigated the production of canned sardine paste and of several smoked products from sardine, mackerel and jack mackerel.

2.7 Spain

Research in the Centro Experimental del Frío in Madrid is concentrated on (i) catch handling and preservation by freezing, eutectic ices and salt-water ice and (ii) the production of fish pastes for further processing into frozen ready-to-cook products. Most of their present investigations are being carried out on jack mackerel; however, some studies have also been done on the sardine, anchovy and sardinella.

2.8 Yugoslavia

The Institute of Food Science and Technology at Zagreb has a long history of cooperation with the fish processing industry introducing new technology for fish processing and also new food items, mostly based on sardine and anchovy.

2.9 Other Countries

Cyprus, Greece and Tunisia have indicated that they have no active research programmes. No replies have been received from the other member countries.

3. REVIEW PROGRESS OF FAO ACTIVITIES ON IMPROVING THE HANDLING AND UTILIZATION OF SMALL PELAGIC FISH

Five years ago FAO outlined a programme to develop a global strategy for improving the utilization of fishery resources which are, at present, underutilized for various reasons. It was hoped that this would lead to a global project to develop the technology which would be required to bring these into full production for human food, if and when they were needed. The handling of small pelagic fish was identified as a particular bottleneck to improved utilization, and Danish and Norwegian contributions were obtained for FAO projects in this field.

The projects aim at designing means to ensure that the quality of small pelagic fish entering trade is substantially improved. Once good quality raw material is available, product technology can be investigated. The projects concentrate on products from small pelagic fish which can be manufactured at village level but also take into account more advanced technology, and activities include test marketing and determination of market potential of products produced on a pilot scale. The concept is to set up a number of parallel complementary programmes of investigation and demonstration in institutes and industry. They would help to determine economic and technical feasibility as well as to catalyze long-term investigations and the transfer of appropriate technology. They would also ensure a strengthening of the capacity of technological institutes in developing countries.

The scope of the projects is as wide as possible, with no geographical limitations or rigid definitions of what constitutes small pelagic fish. To date considerable efforts have been made to identify prospective collaborators and these efforts are now paying off as can be seen from the following review of progress. Although the work has been carried out in regions mainly composed of developing countries, it is hoped that similar activities could also be started in the GFCM region.

3.1 Latin America

As with the approach taken by the GFCM, i.e., to promote a closer collaboration among the institutes of the region, contact was established with institutes in several countries to determine priority programmes in which they would be prepared to collaborate. Most of the institutes have shown a very positive response to the proposed cooperative scheme and an initial meeting of selected senior fish technologists from Argentina, Brazil, Chile, Peru and Uruguay will be held in Montevideo in June 1980 to discuss the common problems of handling small pelagic fish within the area and how to tackle them on an industrial scale.

Storage trials and quality evaluation with Monterrey sardine (Sardinops sagax) and thread herring (Opisthonema libertatae), held in chilled sea water and ice have already been carried out by the project in Mexico. The results showed that substantial increases in st - rage life could be achieved but that the raw material pricing policies for the canning and fish meal industries preclude at present the introduction of chilling.

3.2 India

Initial trials carried out by the project in Mangalore with a chilled sea water carrier boat have been very successful and have attracted a great deal of attention. The results have proved that it is possible to land fish in an excellent condition, and that fish chilled by either method fetch a premium price on the market.

The work in India will continue during 1980 with feasibility studies on the use of a refrigerated sea water (RSW) carrier boat and iced fish versus frozen fish for long distance transportation. A Workshop on Handling Small Fish for the countries surrounding the Arabian Sea will be held in November 1980.

3.2 Other Areas

The programme has also established several preliminary collaborative activities with institutes in West Africa, Tanzania and Thailand. In all these areas there has been a remarkable increase in utilization of fish for human consumption and frequent requests for improved handling are received from them.

4. SUGGESTED ACTION

The Council is invited to review the action which has been taken to implement the recommendations of its Fourteenth Session regarding increased utilization of small pelagic resources for direct human consumption. It may wish to consider how closer cooperation in this field could be achieved and to propose more precise action programmes.

Annex H

| | | |
|---|---|---|
| | FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS<br>ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE<br>ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION | GFCM/XV/80/15<br>April 1980 |

Item 7 of the
Provisional Agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, 22-26 September 1980

# REGIONAL PROJECT FOR THE DEVELOPMENT AND MANAGEMENT OF FISHERIES IN THE MEDITERRANEAN

1. For several years past the General Fisheries Council for the Mediterranean (GFCM) has recognized the need to be able to draw on different types of expertise in order to help its member states to reach rapidly a level which will enable them to take an effective part in activities of regional interest. At its twelfth session held in Varna in 1974 it recommended that a regional statistician be recruited to advise the countries on how to improve their data collection systems (carrying out surveys on the structure and activity of national fishing fleets with a view to designing more efficient sampling schemes, improving processing procedures, etc.) and to upgrade the training of their senior and intermediate level staff. Although this recommendation was repeated at each subsequent session it was not possible to take any follow-up action since the necessary financial resources could not be found.

2. At the thirteenth session of the FAO Committee on Fisheries in October 1979 several delegations stressed the particular needs of Mediterranean fisheries and recalled that the great similarities observed in their nature, their prospects and in the obstacles which slowed down their expansion, made the Mediterranean a region particularly well suited to the establishment of a multidisciplinary regional programme. This point of view was endorsed by the seventy-sixth session of the FAO Council in November 1979. Following these meetings several Mediterranean countries specifically asked FAO to prepare a fisheries development and management project and to submit it to the United Nations Development Programme as well as to any other agency that might help to finance it.

3. The attached document responds to this request. It was transmitted for action to the UNDP regional offices responsible for Europe and the Arab states in February 1980.

4. The objective of this project is not confined to statistics; it also covers all sectors of fisheries where a strengthening of regional activities or support of national activities by a regional multidisciplinary unit would be beneficial.

5. Although progress in the field of resource appraisal has been achieved in several countries, the need is still great for a number of countries to strengthen their research teams and resource appraisal, and to study special research topics.

6. Several countries have also expressed the intention to intensify their fishery programmes and to strengthen their technology and extension services. The presence of experts at the regional level would make it possible to provide member states with technical advice in this respect and coordinate national programmes. With regard to the problem of the most effective utilization of blue fish, which is one of special importance to Mediterranean

fisheries, the GFCM observed at its fourteenth session held in Nantes in 1978 that better coordination between national food technology institutes and a speedier circulation of their results, as well as those obtained outside the region, seemed preferable to providing direct support on a national level.

7. The distribution of stocks and the similarity of Mediterranean fisheries make management a problem of an essentially regional dimension. The urgent need to regulate fishing efforts, particularly of trawling in a number of fishing areas, the weakness of national research and the scarcity of technical studies in this field make this a priority matter as far as assistance at the regional level is concerned. While approximate assessments of stock potential are available, socio-economic studies on the options offered to development and management, and analysis of methods of intervention that might be used to stabilise fisheries at the desired level, are still to be made. It is therefore urgent to select priority topics and split up the execution of the work among the different national teams and, where required, call on expert assistance from outside.

8. It may not be possible until 1982 to identify financing for the comprehensive project designed to meet these needs. In order to meet this eventuality it is proposed that at least a preparatory project be funded up to the middle of 1982. More up-to-date information on the responses received from the financing agencies contacted by FAO and prospects of getting the project under way will be furnished at the fifteenth session of the GFCM.

SUGGESTED ACTION

9. The Council is invited:

(a) to comment on the nature of the project and on the strategy chosen for helping the countries of the region to promote the optimum utilisation of their fishery resources;

(b) to indicate the priority which should be accorded to the project;

(c) to make proposals regarding the measures to be taken to speed up the implementation of the project, in particular its financing under multilateral aid, as well as through voluntary contributions which some countries might wish to provide.

UNITED NATIONS DEVELOPMENT PROGRAMME

**Project of the Governments of Algeria, Bulgaria, Cyprus, Egypt, Greece, Lebanon, Libya, Malta, Morocco, Romania, Syria, Tunisia, Turkey, Yugoslavia**

**DRAFT PROJECT DOCUMENT**

**Title:** Development and Management of Fisheries in the Mediterranean

**Number:** RAB/RER/80

**Project Duration:** 2 years

**Sector:** (05) Agriculture, Forestry and Fisheries

**Subsector:** (0530) Fisheries

**Executing Agency:** The Food and Agriculture Organization of the United Nations (FAO)

**Date of Submission:**

**Estimated starting date:**

**Government inputs:** pour mémoire

**UNDP Inputs:** U.S.$ 372 720

**Signed:** _____
on behalf of FAO

**Date:** _____

**Signed:** _____
on behalf of UNDP

**Date:** _____

I. LEGAL CONTEXT

This Project Document shall be the instrument referred to as such in Article 1, Paragraph 1 of the Assistance Agreement between the United Nations Development Programme and the Governments of those participating countries which have signed the Agreement. Alternatively, for those participating countries which have not signed this agreement, this Project Document shall be the instrument (therein referred to as the Plan of Operation) envisaged in Article 1, Paragraph 2 of the Agreement concerning assistance under the Special Fund Sector of the United Nations Development Programme, between the UNDP and the Governments of those other participating countries which have signed this latter agreement.

II. PROJECT

A. Development Objectives

The ultimate objectives of the Project for the Development and Management of the Mediterranean fisheries are:

(i) to assist and provide the full and rational utilization of the Mediterranean fish resources in accordance with the needs and means of the coastal countries and, in particular, the size and potential yield of their fish resources;

(ii) to foster the technical and scientific capabilities of participating countries and to stimulate regional collaboration to accelerate achievement of collective self reliance to find adequate solutions to their respective fishery development and management problems.

B. Immediate Objectives

(i) to assist coastal countries to upgrade their national systems for the collection and analysis of basic fishery data (e.g., catch, catch/effort, economic and manpower data, etc.);

(ii) to assist in the development and dissemination of improved fishing techniques to reduce harvesting costs and to enable the development of fishing on stocks or grounds still underutilized;

(iii) to promote better utilization of small pelagic species through the development of improved handling and processing technologies and the development of domestic and international trade;

(iv) to stimulate and assist in accurate assessment of fish resources, in particular through the strengthening of regional collaboration for the execution of joint resources surveys and stock assessment study;

(v) to promote and assist in training and manpower development in the various fields of fisheries, notably through the organization

of specialized seminars, the strengthening of regional collaboration and common use of facilities and skills available in the region;

(vi) to promote socio-economic analysis of fisheries development and management alternatives oriented to the formulation of appropriate national fisheries policies, taking into account the need for a corrected action for stocks which are accessible to more than one country.

C. Special Considerations

Several of these problems, notably the assessment, monitoring and management of stocks shared by more than one country imperatively require a regional or subregional approach. For others, such as the utilization of small pelagic species or the training in highly specialized fields, a regional approach can be highly beneficial either by reducing the duplication of efforts or by enabling countries to reach jointly the critical mass.

The General Fisheries Council for the Mediterranean (GFCM) and its various subsidiary bodies - notably its Working Party on Resources Appraisal and Fishery Statistics and its Committee on Resources Management - provide a mechanism through which coastal countries can organize and develop their collaboration in the field of fishery development and management. Appreciable results have been achieved regarding the identification of problems and priorities of regional relevance, the formulation of concerted actions, e.g., for the collection and reporting of compatible fishery statistics or the formulation of concerted regulatory measures (mesh size), the dissemination of concepts or approaches well suited to local conditions, the organization of training courses, the promotion of TCDC, etc. (see the report of the 14th Session of GFCM).

However, this mechanism is still insufficient, for the great majority of coastal states in the Mediterranean are still developing and therefore do not possess as yet the technical and scientific skills required to fully participate in, and benefit from, regional collaboration. Technical input is temporarily required from outside to upgrade national personnel and programmes, to assist in the transfer of methods from other regions in the world where similar issues have already received more satisfactory answers, and to promote and backstop technical collaboration among the region's countries.

The Project is designed to provide this input. On the other hand, the GFCM will be the vehicle for the TCDC component of the Project. At the same time it will periodically review the progress and give overall guidance to the Project.

Background and Justifications

Expressed in volume, the fish resources of the Mediterranean appear to be modest. In 1978, the total production, including that of the Black Sea, was 1.3 million metric tons[1/]. However, owing to the very high unit value of

1/ FAO Yearbook of Fishery Statistics, Vol. 46

its landings, several times above the world average, the Mediterranean ranks among the first in the world, before, for example, such regions as the North West Atlantic or the South East Pacific, better known for the magnitude of their fisheries. Although approximative resource assessments indicate that the overall yield could probably reach a minimum of about 1.5-2.0 million metric tons[1/]. However, for many years the increase in the overall production has been extremely moderate or negligible, illustrating the serious bottlenecks that Mediterranean fisheries are facing.

Most demersal target stocks are overexploited - some extremely seriously - particularly along the European shores. Some countries have already taken certain measures to regulate the fishing effort in their trawl fisheries. However, owing in particular to the general lack of expertise on the technical aspects of this matter, the actions taken are often insufficient or belated to produce the expected improvements. Similarly, regulatory measures such as those aiming at controlling mesh size are often not properly enforced. If the increases in physical yield to be expected from proper management of demersal resources are moderate, the economic and social benefits will be considerable considering the extremely high value of the products and the large excess capacity and costs associated with their overexploitation.

Coastal pelagic stocks (sardine, anchovy, sardinella, etc.) are still underutilized in many sectors (e.g., off North Africa, in the Adriatic). Substantial stocks of horse mackerel could be exploited in western and central Mediterranean, should more efficient and cheap fishing methods and adequate products and marketing be developed. For the time being the high seasonality in stock availability and landings, the moderate overall yields (as compared to other world's regions) and a stagnant domestic demand for current products are at the origin of the many and serious bottlenecks noted in the processing distribution and marketing stages. Still it is from this kind of resources that the bulk of the additional production - estimated at half a million tons or more - is to be expected.

The situation is almost opposite in the Black Sea when the rapid development of the anchovy and horse mackerel stocks along the coasts of Turkey and the USSR has raised a serious concern about the future of the fishery, for no appropriate assessment programme has been implemented to monitor the effects of the exploitation on the resources and, thus, to determine the conditions for their rational exploitation. With an overall catch of horse mackerel and anchovy of 0.5 million metric tons in 1976, the level of harvesting may have already reached the maximum potential yield of the resource.

Generally speaking, assessment and management investigations conducted by coastal countries are seriously insufficient. This results in a poor appreciation of opportunities for fishery development and priorities in development plans as well as of management needs and, more generally, in deficiencies and weaknesses in national fishery policies. However, progress has been achieved in recent years through the activities promoted and coordinated by the GFCM, as well as through the investigations on resource evaluation and

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1/ Levi, D. and J.P. Troadec, 1974 The fish resources of the Mediterranean and the Black Sea. Stud.Rev.GFCM, (54):29-52

survey conducted by various national UNDP/FAO projects in Algeria, Malta, Morocco, Tunisia and Turkey. Several training courses and various working parties on resource assessment and fishery management have been organized by the GFCM. Some developing countries now have one or a few scientists trained in the basic methods of resource evaluation and management. Regional collaboration in this field is active, thus contributing to the steady upgrading of national scientific skills and to the development and dissemination of solutions and approaches well suited to local conditions.

As shown in the above description of the state of Mediterranean fisheries, such progress is still too slow and fragile. National administrations urgently need outside assistance to strengthen technical capabilities of their staff, upgrade their working methods and programmes and develop their collaboration.

Outside support is most urgently required for the collection and analysis of proper fishery data as the quality of the data basis directly affects the whole process of the formulation of adequate fishery development plans. Most Mediterranean fisheries are artisanal and, as such, scattered and heterogeneous. This makes the organization of data collection both conceptually complex and operationally difficult. Practically no country in the region possesses the expertise required for designing efficient sampling schemes and statistical programmes, i.e., likely to produce the information of the kinds and accuracy required while remaining within the financial and manpower limits commensurate with the value of the region fisheries and national economies. National administrations need periodic visits of specialists with expertise in sampling theory and familiarity with the design of sampling schemes in artisanal fisheries and developing countries. Training courses are also needed to rapidly upgrade intermediate and high-level personnel.

Similar needs are encountered in the field of resource appraisal, where training courses in stock assessment and biomass surveys should be organized to strengthen the technical competence of national research teams. The activity of regional and subregional working parties should be intensified to stimulate and coordinate national resources studies and to provide junior scientists sufficient opportunities to get fully familiar with new resource assessment methodologies. To organize and backstop such working parties, e.g., by introducing new approaches for stock assessment studies, a biologist familiar with resource evaluation work is needed. In addition he should appropriate research teams and vessels likely to be used, in collaboration with national scientific teams of countries concerned, to survey the fish resources of those states which do not still possess all the necessary means.

In most countries, fishing methods and gear used by the small-scale fisheries as well as by the more concentrated ones can be substantially improved with respect to their efficiency, their selectivity or their ease of construction and use. To contribute to a better profitability of their fisheries, to facilitate the development of new stocks, the exploitation of which is still unprofitable with traditional fishing methods to improve working conditions of their fishermen, several countries have decided or are considering to set up specialized technological services or to strengthen their extension services in order to speed up the dissemination of improved methods among their fishermen communities. Outside technical support through

the services of a Project Expert and the provision of consultants' advice should considerably speed up the process.

Some countries have also initiated various investigations and programmes to promote better utilization of small pelagic species. When reviewing this essential matter for the development of Mediterranean fisheries, the GFCM, at its 14th Session, noted that the promotion of regional collaboration between food technological institutes investigating relevant matters and of a better dissemination of research findings to countries without similar facilities should be preferred to direct assistance to individual countries (paragraph 73/74 of the report). One expert working within the Project could stimulate regional collaboration in this field and help in the harmonization and promotion of regional programmes in food processing and marketing as well as in the distribution of research findings to the region's countries. At the same time he could provide information on potential markets or supplies, both within and outside the region.

With the assignment of a fishery economist in the Project team, socio-economic analysis on fishery development and management alternatives and goals, on the resource allocation among various national groups of fishermen (e.g., small-scale and large-scale segments) or between countries fishing the same stocks, or economic analysis on the profitability of certain development projects, etc., could be undertaken. At the same time the fishery economist would assist governments to identify and formulate development projects to be submitted to bi or multilateral donor agencies.

Finally, training and manpower development has always been recognized as a crucial factor for the rational development of Mediterranean fisheries. For many countries, it is impossible or economically unjustified to set up and maintain training facilities likely to satisfy all their needs. However, the required critical mass can be found if training activities in specialized fields are jointly planned at regional level. The Project could help the participating countries in assessing their needs and facilities, a programme to which the GFCM is attaching a great importance, and in organizing their collaboration for a proper sharing and strengthening of available training facilities. In sectors and levels where such facilities are still insufficient, e.g., fishery statistics, stock assessment, fishing and fish technology, fishery management, the Project should organize short-term specialized training courses and seminars.

D. Outputs

The outputs of the Project to serve as measurements of achieving fishery development objectives would be:

(i) the technical upgrading of national fishery statistical systems and the promotion of relevant national personnel, the preparation and publication of improved (in scope and reliability) of national and regional statistical bulletins and the reporting to central statistical offices (GFCM, FAO) of statistics of improved reliability, scope and greater detail;

(ii) the development of national fishery research manpower, the organization of joint resource surveys through the cooperation of participating countries and of regional and subregional working parties on resources evaluation;

(iii) the strengthening of national fishing technology and extension services and the building up of a mechanism to improve communication and speed up the dissemination of improved fishing techniques and methods among participating countries;

(iv) the establishment of a mechanism to coordinate and stimulate regional cooperation in the field of fish processing, distribution and marketing with special emphasis on the better utilization of small pelagic species;

(v) basic studies on the current state of the stocks and their fisheries; economic analysis of the fisheries and of their development and management alternatives to provide planners and policy makers with realistic data and sound concepts upon which investment-oriented programmes and national fishery development plans can be based;

(vi) the preparation of national fishery projects

(vii) a regional training scheme including an assessment of the region's training needs and facilities and a plan for a full joint utilization of existing facilities as well as a special training programme including specific courses, workshops and practical training in disciplines such as fishery statistics, stock assessment, resource surveys, fishing and fish technology, fishery management, fishery development planning, etc.

## E. Activities

It is unlikely that the means needed to implement the comprehensive project as described above can be mobilized immediately. It is therefore planned to implement the Project in two phases. During the first phase of about two years, the Project will consist essentially of a full-time Project Manager/Fishery Economist and Fishery Statistician assisted by short-term Consultants in the fields of resource evaluation, fish and fishing technology, fishery management and development planning, training, etc. The activity of the Project during this phase will be concentrated on the following activities:

(i) recruit the Project Manager and the Fishery Statistician

(ii) undertake periodic visits to selected countries. Priority shall be given to countries such as Algeria, Cyprus, Egypt, Greece, Lybia, Malta, Tunisia or Turkey where fisheries are important and national fishery administrations and research institutions require substantial assistance in particular for the upgrading of their statistical systems;

(iii) provide technical assistance and guidance to national statistical officers and fishery administrators for the design and execution of frame surveys, the upgrading and firm establishment of sampling schemes and procedures for data compilation, storage and dissemination to national potential users (fishery administration, research institutes, industry) as well as for their subsequent reporting to the regional office (GFCM, FAO);

(iv) organize two 3-week seminars, e.g., one in English and one in French to train national statisticians and data collectors;

(v) through the recruitment of consultants, undertake basic studies on the macro aspects of development and management of Mediterranean fisheries;

(vi) undertake, in collaboration with national fishery offices, economic analysis of national fisheries and, upon request, provide technical assistance to governments in their fishery development planning exercises;

(vii) assist governments in the identification and formulation of specific national fishery projects;

(viii) the provision to governments of short-term consultancies in various specialized fields of fisheries, e.g., stock evaluation, fishing and fish technology, fishery management, training, etc.

It is expected that the first phase of the Project will be followed by a second phase starting in 1982, during which the present proposed project staff will be increased to include full time experts in resource evaluation, fishing technology and fish processing and marketing.

## F. Inputs

### 1. Government inputs

The Governments will provide facilities, collaboration of national staff and transportation for the Project personnel and their counterparts during the experts' visits. The Government will also support the costs associated with the activities carried out during the Project experts' visits (e.g., for the execution of statistical frame surveys).

### 2. UNDP input

(a) International staff — Duration

Project Manager/Fishery Economist — 18 months

An economist with experience is economic analysis of fisheries; he will be responsible for leading the work of the Project Staff and maintaining close collaboration with governments, international organizations and the fishing industry in particular, and

for the formulation and funding of the second phase of the Project, and for the formulation of national fishery projects; responsible for organizing and implementing basic social and economic studies on selected national fishery sectors, on basic aspects of development and management of Mediterranean fisheries and for other related programmes in relation with fish processing , distribution and marketing. He will be bilingual, in English and French.

| | Duration |
|---|---|
| Fishery statistician | 18 months |

A specialist with expertise in the design and upgrading of fishery sampling schemes with, preferably, experience in the execution of such tasks in artisanal fisheries and developing countries. He will be bilingual, in English and French.

(b) Consultants

Ten man-months will be included in the project budget to enable the recruitment of consultants - as indicated in section "E" (viii) above - including lecturers to serve during the training courses on fishery statistics.

(c) Training

Funds will be provided for conducting two 3-week training courses.

(d) Equipment

A desk computer (about U.S.$ 30 000) should be acquired for the statistician to be used when assisting the countries and for the training courses, as well as one project vehicle (U.S.$ 10 000) and office equipment (U.S.$ 10 000).

G. Preparation of Work Plan

A detailed Work Plan for the implementation of the Project will be prepared by the Project Director in consultation with the Executive Committee. This will be done at the start of the Project and brought forward periodically.

H. Institutional Framework

The GFCM was established in 1952 as an Article XIV body of FAO. The present Members of the Council are nineteen, i.e., all states bordering the Mediterranean and the Black Sea, except Albania and the USSR.

The purpose of the GFCM is to promote the development, conservation, rational management and best utilization of living marine resources. To

these ends, it has the following main functions and responsibilities:

(a) to keep under review the state of these resources and of the fisheries based on them;

(b) to formulate and recommend appropriate measures for the conservation and rational management of living marine resources as well as for the implementation of these recommendations;

(c) to keep under review the economic and social aspects of the fishing industry and recommend measures aimed at its development;

(d) to encourage, recommend, coordinate and undertake training and extension activities in all aspects of fisheries, as well as research and development activities including cooperative projects in the area of fisheries and the protection of living marine resources.

GFCM statistical activities are now carried out within the framework of the Working Party on Resource Appraisal and Fishery Statistics. This group, open to experts from all member countries of GFCM, has, in particular, the responsibility of defining the kinds and standards for data of regional relevance.

The Project will report technical progress achieved in the field of fishery statistics to the Working Party and present a report for overall guidance at the GFCM sessions.

The Project constitutes a part of the UNDP/FAO World Fishery Development and Management Programme which will monitor and give policy guidance to the Project activities.

I. Future UNDP Assistance

An extension will be requested at the end of this Project along the lines given in Section "Background and Justification" but the precise extent and thrust of such a request will be determined after consultation with governments and potential donor agencies.

III. SCHEDULES OF MONITORING, EVALUATION AND REPORTS

A. Tripartite Monitoring Reviews

The Project will be subject to periodic review in accordance with the policies and procedures established by UNDP for monitoring project and programme implementation.

B. Evaluation

The Project will be subject to evaluation, in accordance with policies and procedures established for this purpose by UNDP. The organization, terms of reference and timing of the evaluation will be decided by consultation between UNDP and FAO.

C. Reports

(i) a series of reports to the countries on specific problems and further actions required;

(ii) technical reports on seminars;

(iii) a progress report will be prepared at the end of each 6-month period;

(iv) a terminal report containing the major findings and recommendations of the Project will be prepared at the end of the Project.

Annex I

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE

ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION

GFCM/XV/80/16
June 1980

Item 8.1 of the
Provisional Agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, Spain, 18-26 September 1980

# REVIEW OF THE REGIONAL MEDITERRANEAN AND BLACK SEA AQUACULTURE DEVELOPMENT PROJECTS

Aquaculture has a special significance in the Mediterranean because of the limited potential for capture fishery development and the increasing demand for sea food in the countries of the region. Various intergovernmental meetings of the Mediterranean Coastal States held during the past few years have recommended the expansion of intensification of aquaculture. An Expert Consultation on Aquaculture Development in the Mediterranean Region (Athens, March 1978), recommended the formulation of a regional cooperative project for coastal aquaculture development as a part of the United Nations Environment Programme (UNEP) Mediterranean Action Plan. In implementation of this recommendation, UNDP approved a "Preparatory Assistance for a Regional Mediterranean Aquaculture Development Project" (MEDRAP) for execution by FAO within the framework of the UNDP/FAO Aquaculture Development and Coordination Programme (ADCP). Under this project, a mission was fielded to investigate the feasibility of expanding coastal aquaculture through the exchange of existing technologies, improvement and pilot-testing of techniques, and research and training.

The mission visited the 13 Mediterranean countries which expressed interest in a cooperative effort to develop aquaculture, and appraised the state of aquaculture, the potential for development and the organizational, technical and production input requirements for the expansion or introduction of coastal aquaculture. The survey showed that there are many common needs, problems and opportunities for the development of aquaculture, that could best be handled by a regional project. Consequently, the mission prepared a project document describing such a project, which has been submitted by UNDP to the participating countries for endorsement. To facilitate implementation of the project, UNDP approved advance recruitment of the Project Coordinator, who took up his duties in June 1980.

The project will be implemented by the Food and Agriculture Organization of the United Nations (FAO) in association with the World Health Organization (WHO). It is aimed at providing essential support services for a region-wide development programme through assisting participating countries in implementing a series of coordinated national development activities of regional significance, including field testing, demonstration and regional training. The main emphasis will be on the transfer of existing technology within the region. One way of accomplishing this will be to initiate types of aquaculture which have proven economically successful in one country in other countries where conditions are suitable. Another way is to combine techniques which have been developed traditionally or through research in several countries or institutions, and to conduct pilot projects to test their technical and economic viability as a system. Provision is also made for research to improve production techniques, or to strengthen support services.

The project will have headquarters with a core staff of three international experts: a project coordinator and two senior aquaculturists, one with extensive experience in coastal fish culture and the other with extensive experience in shellfish farming. The international staff will assist the participating countries in planning, coordinating and monitoring of project activities in each country. These activities will be national projects, run by national staff, with technical support from MEDRAP. The technical support will be in the form of expert advice, training and specialized equipment. Expert advice will be through the expatriate staff and the assignment of short-term consultants to work at individual projects. Training will, for the most part, take the form of short-term visits to selected commercial farms and research institutions. There is also one workshop scheduled per year.

MEDRAP will also be involved in the definition of environmental and human health aspects which affect aquaculture. Close cooperation will be maintained with UNEP, in the context of the Mediterranean Action Plan, and with WHO as an Associated Agency, with regard to the planning and implementation of the Environmental Health Impact Assessment, aimed at preventing health hazards associated with the production and consumption of aquaculture products.

Interest in the development of coastal aquaculture was also expressed by countries bordering the Black Sea as one of the major means of increasing fishery production. The Governments of Bulgaria, Romania and Turkey expressed, to the UNDP, their interest in the implementation of a cooperative programme of aquaculture in the Black Sea region, along the lines of the programme formulated for the Mediterranean region. In response to this, UNDP approved a preparatory assistance project to investigate the need and feasibility of a co-operative regional project and it was implemented within the framework of UNDP/FAO Aquaculture Development and Coordination. A mission fielded under the project evaluated the state of aquaculture, the potential for future development, constraints to development and, based on its findings, formulated a regional cooperative programme of development. The project aims at expansion of aquaculture, primarily through the transfer and improvement of existing technologies. The project document is now under the consideration of UNDP.

The project is organized similar to MEDRAP. There are provisions for two full-time international staff and numerous consultants to assist the participating countries. Under the regional cooperative effort, centres for development will be set up in the participating countries. Each centre will have the primary responsibility of bringing its particular type of culture successfully through pilot scale to a point where it is ready to be transferred to another country. As part of such an effort, expertise from outside the region will be channelledto the centre where it can be utilized most effectively and yield the greatest benefit for the region as a whole. After a particular technology is developed, the centre would have the responsibility for training personnel from other countries, and to facilitate initial development in any new location.

Although the mission did not visit aquaculture centres in the USSR, it is known that they have advanced capabilities in both culture technology and support activities. If the USSR were to join in a cooperative programme on aquaculture, they would undoubtedly make a major contribution.

It should be pointed out that these projects will be implemented within the framework of the inter-regional aquaculture development and coordination programme and that as such they can benefit from inputs (transfer of methods, expertise, etc.) from other projects outside the Mediterranean and Black Sea region.

The Council is invited: (i) to comment on the proposal for regional projects to develop aquaculture in the Mediterranean and in the Black Sea; (ii) to express views on the importance to be attached to these activities and on possible actions to be taken to accelerate their execution and (iii) to advise on means to promote close cooperation between Mediterranean countries in the implementation of the projects proposed.

Annex J

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| | FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS<br>ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE<br>ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION | GFCM/XV/80/18<br>April 1980 |

Item 8.3 of the
Provisional Agenda

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN (GFCM)

Fifteenth Session

Palma de Mallorca, 22-26 September 1980

# PROGRESS REPORT ON THE JOINT FAO(GFCM)/UNEP COORDINATED PROJECT ON POLLUTION IN THE MEDITERRANEAN

1. The following four pilot projects are being executed by research centres nominated by their governments and coordinated by FAO(GFCM) in close collaboration with the United Nations Environment Programme (UNEP):

Baseline studies and monitoring of metals, particularly mercury and cadmium, in marine organisms (MED II),

Baseline studies and monitoring of DDT, PCBs and other chlorinated hydrocarbons in marine organisms (MED III),

Research on the effects of pollutants on marine organisms and their populations (MED IV), and

Research on the effects of pollutants in marine communities and ecosystems (MED V).

2. These pilot projects commenced operations in October 1975 and were programmed to terminate in December 1977. However, based on proposals made by experts' consultations and UNEP intergovernmental meetings, the pilot phase was extended, by two terms, up to March 1981.

3. Forty-nine Mediterranean research centres have been nominated by their governments to participate in one or more of the above four pilot projects, but only 41 of them have signed agreements so far. By 1 April 1980, 90 agreements (32 for MED II, 24 for MED III, 19 for MED IV and 15 for MED V) had been signed with these research centres and four with Regional Activity Centres selected from the participating research centres to assist FAO(GFCM) in performing specific tasks in the field of marine pollution.

4. Equipment delivered to the majority of the participating research centres in developing countries includes 12 atomic absorption spectrophotometers (AAS) and 10 gas chromatographs (GC); in addition, different smaller equipment, spare parts, accessories, glassware, chemicals and other material have been provided.

5. From 88 requests for scientific visits and fellowships received from participating research centres, 56 were completed, 12 cancelled or substituted and the remaining 20 are in different stages of arrangement or pending nomination of fellows.

6. Several different consultants, specialists in analysis of heavy metals and chlorinated hydrocarbons as well as in evaluation of results, have visited those research centres which needed assistance in preparing or revising their programmes, in performing analysis with AAS and GC, in evaluating results, etc.

7. Regarding publications and other documents, the Manual on Sampling and Analysis of Biological Material (1) will soon be updated and published by UNEP as a part of a MED POL manual on reference methods. A Manual on Statistical Tests was published in 1979 (2). The Selected Bibliography on Studies and Research Relevant to Pollution in the Mediterranean, published in 1977 (3) was updated with 2 000 additional bibliographic references, as FAO contribution for a Consolidated Bibliography on Pollution in the Mediterranean to be published by UNEP.

8. Two other Manuals (on bioassay methods and ecosystem studies) (4) (5), are ready in draft form and will be published in 1980 as an FAO contribution toward the standardization of methods to be used in assessment of pollution in the Mediterranean.

9. The activities of the principal investigators, nominated up to March 1979 by the research centres, to carry out the execution of the pilot projects and their collaborators, are reflected in various FAO(GFCM) Circulars (6), in working documents presented at the Mid-term Expert Consultation on the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean, held in Dubrovnik from 2 to 13 May 1977 (7), and in the "Summary Reports on Scientific Results on MED POL" distributed during the UNEP Intergovernmental Review Meeting of Mediterranean Coastal States on the Mediterranean Action Plan (Barcelona, 11-13 February 1980) (8).

10. Although the start of analytical work in the majority of the research centres took considerably more time than envisaged, the results show that the pilot projects, MED II and MED III, in principle, have met the objectives set in the Operational Document (9). Several research centres, without prior experience in these analytical fields, now have the equipment and analytical capabilities to permit a more even geographical coverage of the Mediterranean in monitoring marine pollution.

11. The selection of mercury and cadmium as the obligatory metals to be studied in selected marine organisms within the framework of pilot project MED II has proved to be justified in view of their possible hazard to the marine environment and the possibilities of obtaining comparable results from different laboratories. The intercalibration exercise organized and implemented by the IAEA International Laboratory of Marine Radioactivity in Monaco has shown good results also for copper and zinc, making them suitable as a second priority. Analyses of other metals, of local importance, have provided valuable information.

12. The study of DDT and PCBs, as priority compounds in selected marine organisms, within the framework of pilot project MED III, was also a good choice in view of the available information on their use, persistence and toxicity, although their analysis is much more complicated than that of metals.

13. Some research centres have also analysed the above pollutants in sediments and seawater, thus providing valuable information on the relationship between levels in organisms and their habitat.

14. Several research centres have encountered difficulties in studying organisms which were agreed upon in the Operational Document. Some of the species listed in that document are not available all over the Mediterranean and others are rare and/or available during part of the year only. In such cases, research centres have analysed species easily available and not always those of commercial importance.

15. The seasonal sampling programmed, i.e., four times a year, has not always been respected and was sometimes reduced to only once or twice a year. The selection of the sample sites

has been made by each research centre, sometimes without careful study of water quality and effluent discharge. Only some research centres have established transects (coast-open sea) and located their stations along such transects.

16. The procedures used in sampling, sample treatment and analysis by the majority of participating research centres have followed those described in FAO Fisheries Technical Paper No. 158 (1).

17. Within the framework of pilot project MED IV, mainly long-term experiments were envisaged with the aim of investigating sublethal effects of selected pollutants. However, the studies of the participating research centres covered many different subjects; in most cases short-term toxicity tests were carried out. It seems that many participating research centres have not paid much attention to the Operational Document when proposing their programme; instead, they tended to continue existing ongoing activities. Consequently, too many species and pollutants have been considered during the experiments, thus reducing considerably the potential value of results obtained. Restriction to the few obligatory or alternative species (including their life cycles) would better support and explain results obtained in MED II, MED III and MED V.

18. However, valuable information on the effects of pollutants has certainly become available, and some research centres with no previous experience in this field have been able to start some work.

19. In pilot project MED V, the studies were supposed to be thoroughly interdisciplinary. Ecological indices, data on pollutants and other relevant environmental parameters were to be collected. Whenever possible, an experimental approach was to be used, with observations in confined areas and under controlled environmental conditions.

20. Also in this project, many participating research centres joined the pilot project with their ongoing programmes, unchanged or slightly modified, resulting in a variety of approaches. Most studies have been concentrating on benthic communities, but some work on effects on pelagic communities was also done. In some cases, experimental lagoons, some polluted by sewage and others unpolluted, as controls, were used for studies of pollutants effects. One major problem of community/ecosystem studies, bearing in mind the non-specific nature of the response, was to distinguish pollutant-induced changes from those due to other causes. It is of course even more difficult to relate the effects to a single substance or a group of substances.

21. Data collected through these pilot projects will certainly contribute to the assessment of the present distribution of some selected pollutants in marine organisms, especially those of commercial importance, which will lead to a better understanding of eventual risks to which marine organisms and fishery resources may be exposed and to the development of environmental quality criteria. At present, all MED II and MED III data are being processed in the FAO Fisheries Information, Data and Statistics Service, using their computer facilities. The data will be rearranged according to species, contaminants and sampling area and submitted to basic statistical tests.

22. In a second step, the mercury contamination data will be modified with sea food consumption data (presently very limited) sampled separately in selected Mediterranean countries, to draw conclusions on eventual risks of sea food consumers of exceeding their allowable daily intake. This is done by using a computer simulation model, which does not only allow for estimation of risk at different levels of selected population groups, but also for testing the effectiveness of possible remedial measures. The model can be used with other contaminants as well.

23. The present pilot phase is terminating on 31 March 1981. However, final reports have been requested from the participating principal investigators by 31 March 1980 to allow FAO and UNEP to analyse results, and prepare reports on levels of selected contaminants in

selected marine organisms. The results will be presented at the forthcoming meeting of Government-nominated experts (October 1980) and subsequently at the UNEP Intergovernmental Review Meeting scheduled for February 1981.

24. Based on recommendations made at various expert and intergovernmental meetings, a draft long-term programme for pollution monitoring and research (MED POL - Phase II) was formulated by the Secretariat of the Convention for the Protection of the Mediterranean Sea Against Pollution (UNEP) in close cooperation with the international organizations which have supported the pilot phase of the programme (MED POL - Phase I).

25. The objectives of such a programme are to provide, on a continuous basis, the Parties to the Convention with:

indicators of the effectiveness of the measures taken under the Convention and the protocols;

information which may lead to eventual revisions of the relevant provisions of the Convention and the protocols and for the formulation of additional protocols;

information which could be used in formulating environmentally sound national, bilateral and multilateral management decisions, essential for the continuous socio-economic development of the Mediterranean region on a sustainable basis.

26. These objectives will be achieved through the evaluation of the information on sources, amounts, levels, trends, pathways and effects of pollutants in the Mediterranean which will be collected, analysed and reported on a systematic basis using commonly agreed methods.

27. The draft programme for long-term monitoring and research will be submitted to the UNEP Intergovernmental Review Meeting in February 1981.

## ACTION EXPECTED FROM THE COUNCIL

28. The Council is invited to note the activities which took place since its last session within the framework of the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean.

29. It is also invited to present its views on the objectives and implementation of the long-term programme for pollution monitoring and research, which could be brought to the attention of the UNEP Intergovernmental Review Meeting.

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(1) Manual of Methods in Aquatic Environment Research Part 3 - Sampling and Analyses of Biological Material, FAO, Fisheries Technical Paper No. 158, FAO Rome 1976

(2) Manual of Methods in Aquatic Environment Research Part 5 - Statistical Tests, FAO, Fisheries Technical Paper No. 182, FAO Rome 1979

(3) Selected Bibliography on Studies and Research Relevant to Pollution in the Mediterranean, FAO, Fisheries Technical Paper No. 165, FAO Rome 1977

(4) Manual on Bioassay Techniques (In draft form)

(5) Manual for Investigations of Pollution Induced Modifications of Marine Ecosystems (In draft form)

(6) General Fisheries Council for the Mediterranean (GFCM)

Circular No. 5 (October 1976)
Joint FAO(GFCM)/UNEP Coordinated Project in Pollution in the Mediterranean, Report Number 1

Circular No. 6 (February 1977)
Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean, Report Number 2

Circular No. 7 (May 1978)
Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean, Report Number 3

(7) Coordinated Mediterranean Pollution Monitoring and Research Programme (MED POL). Report of the Mid-term Expert Consultation on the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean (MED II, III, IV and V) held in Dubrovnik 2-13 May 1977, FAO Rome 1977

(8) Summary Reports on the Scientific Results of MED POL (Summary Reports of participants in the Coordinated Mediterranean Monitoring and Research Programme, MED POL) 3 Vol. UNEP/IG.18/INF.3; 6 February 1980

(9) Pollution in the Mediterranean. Joint Coordinated Project. Report of the FAO(GFCM)/UNEP Expert Consultation held in Rome, 23 June - 4 July 1975, FAO Rome, July 1975.

Annex K

## LIST OF DOCUMENTS PRESENTED AT THE SESSION 1/

GFCM/XV/80/1 Provisional Agenda

2 Annotated Provisional Agenda

3 Provisional Timetable

4 Present state of development of the GFCM statistical system

5 Report of the Technical Consultation on the Assessment and Management of the Black Sea Turbot

6 Rapport de la Consultation technique pour l'évaluation des stocks dans les divisions statistiques Baléares et golfe du Lion (in French)

7 Rapport de la Consultation technique pour l'évaluation des stocks dans l'Adriatique (in French)

8 Report of the First Session of the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation

9 Report of the survey on mesh sizes actually used in the main Mediterranean trawl fisheries

10 Regulation of fishing effort with special reference to Mediterranean trawl fisheries

11 Report of the Third Session of the Committee on Resource Management

12 Programme of the Symposium on Management of Living Resources in the Mediterranean Coastal Area

13 Progress report on the cooperative programme on small pelagic fish utilization

14 Progress report on the preparation of a directory of training facilities and needs for the Mediterranean area

15 Regional project for the development and management of fisheries in the Mediterranean

16 Review of the regional Mediterranean and Black Sea aquaculture development projects

17 Report of the Fourth Session of the Cooperative Programme of Research on Aquaculture (COPRAQ)

18 Progress report on the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean

Inf.1 Provisional list of documents
2 Information for participants
3 Provisional list of participants
4 GFCM Statistical Bulletin No. 3: nominal catches 1968-78

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1/ The list of documents and communications presented at the Symposium is given in Appendix 2 to Annex C

## RECENT GFCM PUBLICATIONS

- Data on fishing vessels and gear in the Mediterranean. Studies and Reviews No. 56. 1977
- Report of the seventh session of the Working Party on Resource Appraisal and Fishery Statistics. Rome, 30 January-3 February 1978 (FID/R204)
- Report of the second session of the Committee on Resource Management. Rome, 19-21 June 1978 (FID/R207)
- Report of the fourteenth session of the General Fisheries Council for the Mediterranean. Nantes, 16-20 October 1978 (Rep.GFCM (14))
- Report of the Technical Consultation on the Assessment and Management of the Black Sea Turbot. Istanbul, 11-15 June 1979 (FID/R226)
- Report of the Technical Consultation for Stock Assessment in the Balearic and Gulf of Lions Statistical Divisions. Palma de Mallorca, 1-5 October 1979 (FID/R227)
- Report of the fourth session of the Cooperative Programme of Research on Aquaculture. Barcelona, 16-19 October 1979 (FIPL/R232)
- Report of the first session of the Working Party on Acoustic Methods for Fish Detection and Abundance Estimation. Ancona, 12-16 November 1979 (FIPL/R231)
- Report of the Technical Consultation for Stock Assessment in the Adriatic. Split, 2-6 June 1980 (FIPL/R239)
- Report of the third session of the Committee on Resource Management. Rome, 17-19 June 1980 (FID/R240)
- Regulation of Fishing Effort with Special Reference to Mediterranean Trawl Fisheries. 1980 (FIPL/T197)
- Aspects of Brackish Water Fish and Crustacean Culture in the Mediterranean. Studies and Reviews No. 57. 1980
- Management of Living Resources in the Mediterranean Coastal Area. Studies and Reviews No. 58 (in print)

## PUBLICATIONS ISSUED IN THE FRAMEWORK OF THE COORDINATED MEDITERRANEAN POLLUTION MONITORING AND RESEARCH PROGRAMME (MED POL)

- Report of the FAO(GFCM)/UNEP Expert Consultation on the Joint Coordinated Project on Pollution in the Mediterranean. Rome, 23 June-4 July 1975
- Report of the Mid-Term Expert Consultation on the Joint FAO(GFCM)/UNEP Coordinated Project on Pollution in the Mediterranean (MED II, III, IV and V). Dubrovnik, 2-13 May 1977
- Manual of Methods in Aquatic Environment Research. Part 3. Sampling and Analyses of Biological Material. 1977 (FIRI/T158)
- Selected Bibliography on Studies and Research Relevant to Pollution in the Mediterranean. 1977 (FIRI/T165)
- Manual of Methods in Aquatic Environment Research. Part 5. Statistical tests. 1979 (FIRI/T182)

## FAO SALES AGENTS AND BOOKSELLERS

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